

Transportation for Oahu Plan TOP 2025



Prepared for:

**Oahu Metropolitan
Planning Organization**

Prepared by:

CarterBurgess

In association with:

R.M. Towill Corporation

Citizen Planner Institute

AE COM Consulting Transportation Group

IBI Group

Transportation for Oahu Plan TOP 2025

Prepared for:

Oahu Metropolitan Planning Organization
and its Participating Agencies

Prepared by:

Carter::Burgess

1001 Bishop Street
Pauahi Tower, Suite 850
Honolulu, Hawaii 96813

In Association with:

R.M. Towill Corporation
Citizen Planner Institute
AE Com Consulting Transportation Group
IBI Group

Approved by the OMPO Policy Committee on
April 6, 2001

The preparation of this document was financed in part through grants from the U.S. Department of Transportation, Federal Transit Administration and Federal Highway Administration, under Chapter 53 of 49 U.S.C. and 23 U.S.C. The contents of this document do not necessarily reflect the official views or policies of the U.S. Department of Transportation.

Table of Contents

Executive Summary	ES-1
Purpose and Background	ES-1
Goals and Objectives	ES-2
Process and Analysis.....	ES-2
Results.....	ES-3
 1.0 Introduction	 1-1
1.1 Purpose of the Transportation for Oahu Plan (TOP) 2025.....	1-1
1.2 Planning Process	1-1
1.2.1 Federal Requirements.....	1-3
1.2.2 Participating Agencies.....	1-4
1.2.3 Public Involvement	1-5
1.2.3.1 Public Involvement Outreach Efforts.....	1-5
1.2.3.2 Environmental Justice Efforts	1-7
1.3 Goals and Objectives.....	1-7
1.4 Elements of the TOP 2025	1-10
1.5 Relationships to Other Plans	1-11
 2.0 The Regional Setting	 2-1
2.1 Geographic Setting.....	2-1
2.2 Socio-Economic Conditions.....	2-1
2.3 Year 2000 Transportation System.....	2-4
2.3.1 Street and Highway System	2-4
2.3.2 Transit System	2-5
2.4 Existing Transportation Conditions	2-7
2.5 Growth and Development Patterns and Goals	2-9
2.6 Committed Transportation Improvements	2-16
2.7 Future Transportation Challenges	2-16
2.8 Transportation Funding Outlook.....	2-19
2.8.1 Existing Federal Highway Revenues	2-19
2.8.2 Federal Highway Revenue Assumptions and Projections.....	2-20
2.8.3 FHWA Funding Levels for Oahu.....	2-21
2.8.4 Existing Highway State Revenues	2-23
2.8.4.1 State Highway Special Fund Description.....	2-23
2.8.4.2 State Highway Funding Assumptions and Projections	2-24
2.8.5 Transit Sources of Funds.....	2-25
2.8.5.1 Existing Federal Transit Funding.....	2-25
2.8.5.2 State and City Funding Available for Transit	2-26
2.8.6 Additional Funding Sources.....	2-27
2.8.7 Summary of Funding Outlook.....	2-27
 3.0 Project Identification, Screening and Evaluation	 3-1
3.1 Project Identification	3-1
3.1.1 Identifying Baseline Projects	3-1

3.1.2	Identifying Projects for Consideration in the TOP 2025.....	3-2
3.1.2.1	Agency Recommendations.....	3-2
3.1.2.2	Public Recommendations.....	3-2
3.1.2.3	Technical Analysis.....	3-3
3.2	Evaluation Process	3-3
3.3	Level 1 Screening.....	3-4
3.4	Level 2 Project Evaluation	3-6
3.4.1	Congestion Relief Projects.....	3-6
3.4.2	Transit and Alternative Modes Projects.....	3-7
3.4.3	Operations and Safety Projects	3-7
3.4.4	Second Access Projects.....	3-8
3.4.5	Projects that Support Community Planning Goals.....	3-8
3.4.6	Projects that Provide Local Circulation and/or Community Access.....	3-9
3.4.7	Summary of Level 2 Project Evaluation	3-9
3.5	Building the TOP 2025 Plan	3-10
4.0	The Transportation for Oahu Plan (TOP) 2025.....	4-1
4.1	Congestion Relief Projects.....	4-1
4.2	Transit and Alternative Mode Projects.....	4-1
4.3	Operations and Safety Projects	4-2
4.4	Second Access Projects.....	4-2
4.5	Projects in Support of Community Planning Goals	4-2
4.6	Projects that Provide Local Circulation and/or Community Access.....	4-3
4.7	Projects Included in the TOP 2025	4-3
4.8	Illustrative Projects.....	4-13
5.0	Performance of the TOP 2025.....	5-1
5.1	Transportation Service Goal.....	5-1
5.1.1	Transit System Performance	5-1
5.1.2	Highway System Performance.....	5-3
5.2	Remaining Goals and Overall TOP 2025 Performance	5-8
5.3	Environmental Justice Considerations	5-16
6.0	TOP 2025 Funding	6-1
6.1	Project Financing.....	6-1
6.1.1	Additional Revenue Sources	6-2
6.1.1.1	Developer Funding.....	6-2
6.1.1.2	Additional State Revenue.....	6-2
6.1.1.3	Total Available Funding.....	6-4
6.1.2	Conclusions for Project Financing.....	6-5
6.2	Transportation Improvement Program.....	6-6
6.3	Project Development Process.....	6-6
7.0	Conclusion.....	7-1

The following technical appendices are bound in a separate document:

- **Appendix A:** Land Use by Traffic Analysis Zone
- **Appendix B:** Project Screening Criteria, Methods, Results (Level 1)
- **Appendix C:** Detailed Evaluation Criteria, Methods, Results (Level 2)

List of Tables

Table 1-1	Goals and Objectives for the Transportation for Oahu Plan 2025.....	1-8
Table 2-1	Year 2000 Daily Person Trips	2-8
Table 2-2	Year 2000 Resident Trip Mode Share	2-8
Table 2-3	Existing (Year 2000) Travel Conditions on Oahu	2-9
Table 2-4	Land Use for Oahu (Existing Year 2000 and Projected Year 2025)	2-10
Table 2-5	Population for TOP 2025 (Existing Year 2000 and Projected Year 2025) ..	2-12
Table 2-6	Employment for TOP 2025 (Existing Year 2000 and Projected Year 2025).....	2-15
Table 2-7	Change in Daily Person Trips (Existing Year 2000 to 2025 Baseline)	2-16
Table 2-8	Mode Share for Trips by Residents (Existing Year 2000 to 2025 Baseline)	2-17
Table 2-9	Change in VMT per Day (Existing Year 2000 to 2025 Baseline).....	2-17
Table 2-10	Change in VHT per Day (Year 2000 to 2025 Baseline).....	2-18
Table 2-11	Change in Hours of Delay (Year 2000 to 2025 Baseline)	2-18
Table 2-12	Historical FHWA Program Annual Rate of Growth in Authorization Levels for Hawaii	2-21
Table 2-13	Application of FHWA Funds to Oahu for 2000 to 2025	2-22
Table 2-14	Federal Funds Available for Highway Projects (in millions of year 2000 \$).....	2-23
Table 2-15	Estimated State Match for Oahu (in millions of year 2000 \$).....	2-24
Table 2-16	Federal Funding Available to Transit (millions of year 2000 \$)	2-26
Table 2-17	State and City Transit Funding (millions of year 2000 \$)	2-27
Table 2-18	Summary of Funding Outlook	2-27
Table 3-1	Baseline Projects for TOP 2025.....	3-1
Table 3-2	Level 1 Project Screening Criteria.....	3-5
Table 4-1	TOP 2025 Projects	4-4
Table 4-2	Illustrative Projects for Consideration in Future RTP Updates	4-14
Table 5-1	Mode Share for Trips by Residents (2025 Baseline to TOP 2025 Scenario) .	5-2
Table 5-2	Transit Ridership Comparison	5-2
Table 5-3	Change in VMT per Day (2025 Baseline to TOP 2025 Scenario)	5-3
Table 5-4	Change in VHT per Day (2025 Baseline to TOP 2025 Scenario)	5-4
Table 5-5	Change in Hours of Delay (2025 Baseline to TOP 2025 Scenario)	5-4
Table 5-6	TOP 2025 Performance	5-13
Table 6-1	Funding from Existing Sources (millions of year 2000 \$)	6-1
Table 6-2	Total Transportation Funding Needs (millions of year 2000 \$)	6-1
Table 6-3	State Highway Special Fund Tax Rate History	6-3
Table 6-4	Potential State Tax Revenue Growth Scenarios Based on Historical Trends.	6-3
Table 6-5	Total Available Funding for TOP 2025 (Millions of Year 2000 \$).....	6-4
Table 6-6	Total Highway Sources and Uses of Funds	6-5
Table 6-7	Total Transit Sources and Uses of Funds	6-6

List of Figures

Figure 2-1 State of Hawaii	2-2
Figure 2-2 Existing Roadway System	2-3
Figure 2-3 Population Change by District.....	2-13
Figure 2-4 Employment Change by District	2-14
Figure 4-1 Project Locations: Kalihi to East Honolulu.....	4-7
Figure 4-2 Project Locations: Central Oahu to Aiea.....	4-8
Figure 4-3 Project Location: Bus Rapid Transit	4-9
Figure 4-4 Project Locations: Ewa.....	4-10
Figure 4-5 Project Locations: Waianae.....	4-11
Figure 4-6 Project Locations: Windward and North Shore.....	4-12
Figure 4-7 Project Locations: Illustrative Projects.....	4-15
Figure 5-1 Transit Ridership by Year	5-3
Figure 5-2 Vehicle Hours of Travel by Facility Type.....	5-5
Figure 5-3 Vehicle Hours of Delay by Facility Type.....	5-6
Figure 5-4 Congested Lane Miles in the Morning Peak	5-7
Figure 5-5 Travel Time Savings to Downtown.....	5-9
Figure 5-6 Travel Time Savings to Waikiki.....	5-10
Figure 5-7 Travel Time Savings to Pearl Harbor.....	5-11
Figure 5-8 Travel Time Savings to Kapolei.....	5-12
Figure 5-9 Environmental Justice Populations and TOP 2025 Projects	5-19

Executive Summary

Purpose and Background

As the designated metropolitan planning organization for the island of Oahu, the Oahu Metropolitan Planning Organization (OMPO) is responsible for carrying out the various requirements of the metropolitan transportation planning process. These requirements are mandated by the United States Department of Transportation as the means of establishing the eligibility of metropolitan areas for federal funds earmarked for ground transportation systems. One of these requirements is that each major urban area develops a multi-modal long-range plan that documents ground transportation projects selected for federal funding for a minimum time horizon of 20 years.

The previous long-range transportation plan for Oahu, the *2020 Oahu Regional Transportation Plan (2020 ORTP)*, was adopted by OMPO in 1995. The *Transportation for Oahu Plan 2025*, or *TOP 2025*, updates the 2020 ORTP to respond to the changing transportation needs of Oahu and extends the planning horizon to the year 2025.

The TOP 2025 was developed through an intensive 12-month planning effort involving the following tasks:

- Updated and extended the planning horizon to 2025 for land use and socioeconomic forecasts.
- Employed a new and improved travel demand forecasting model to estimate highway and transit system usage for the future study year of 2025.
- Developed goals, objectives and evaluation criteria/measures of effectiveness for use in selecting projects for inclusion in the TOP 2025.
- Compiled a list of past candidate projects from city and state sources.
- Received suggested projects from the public, newspaper articles and other public input sources.
- Prepared evaluation of candidate projects based on evaluation criteria and measures of effectiveness.
- Met regularly with the Citizen Advisory Committee (CAC) and their Subcommittee on Public Involvement to receive their input and discuss the most effective means of obtaining public input.
- Briefed and received input from groups with special transportation needs and from the general citizenry.
- Worked closely on technical aspects of the study with a TOP 2025 Task Force consisting of key individuals from city and state agencies and departments and a representative from the CAC.

- Reviewed key assumptions and work products with the OMPO Technical Advisory Committee.
- Reviewed policy issues and received direction from the OMPO Policy Committee at key decision points.

Goals and Objectives

The goals and objectives of the TOP 2025 were developed at the outset of the study and reflect the issues and concerns raised by participants in the study. Four major issues were part of the 2020 *ORTP* and were judged to continue to be reasonable for the TOP 2025 planning process. The following system goals were adopted by the OMPO Policy Committee for the four major issues:

- Transportation Services – Develop and maintain Oahu’s islandwide transportation system to ensure efficient, safe, convenient and economical movement of people and goods.
- Quality of Life – Develop and maintain Oahu’s transportation system in a manner that maintains environmental quality and community cohesiveness.
- Community Responsibility – Develop and maintain Oahu’s transportation system in a manner that is sensitive to community needs and desires.
- Demand Management – Develop a travel demand management system for Oahu that optimizes use of transportation resources.

Along with these four goals, a series of objectives were developed that would accomplish each of the system goals. The goals and objectives for the TOP 2025 are documented in Table 1-1 of the full report.

Process and Analysis

Travel on Oahu is generated by resident households, port operations, the airport, other commercial activities and visitors. As part of the TOP 2025 planning process, a travel demand model was applied to simulate the choices made by residents, businesses and visitors regarding the nature, number, mode, time-of-day and geographic orientation of trips that are made on a typical weekday. This travel demand model was developed by OMPO prior to the TOP 2025 planning process and was based on data obtained in extensive surveys of Oahu households, transit riders and air passengers.

Socioeconomic and growth trends were evaluated during the TOP 2025 planning process, and forecasts were developed to show projected increases in population and employment from current conditions to the year 2025. These growth projections were used as major input for the OMPO travel demand model, and the model was then applied to predict how travel patterns would change by 2025 on Oahu.

Candidate projects for transportation improvements to be included with the final recommendations of the TOP 2025 were identified through input from the technical staffs of the participating agencies, through input from the public and through technical analysis of future travel demand. The candidate projects were then evaluated through a two-step process as follows:

- A Level 1 screening process utilized a set of criteria related to the established project goals and objectives and focused on the planning status of each project. Projects that passed the Level 1 screening were evaluated in more detail as part of the Level 2 process.
- In the Level 2 evaluation, projects were classified into several categories reflecting the primary purpose of the proposed project. Appropriate evaluation measures (measures of effectiveness) were used to evaluate projects within each category.

As part of Level 2, an assessment was conducted to evaluate how the transportation system will function in the areas of travel time, congestion and transit service for the year 2025 with and without the recommended list of TOP 2025 improvements. For conditions without the TOP 2025 improvements, the scenario was called the TOP 2025 Baseline, and the network for the OMPO travel demand model was assumed to add only projects that are currently under construction or projects with funding commitments for construction. For the TOP 2025 scenario, the OMPO travel demand model was defined to reflect the proposed transportation system improvements for the TOP 2025 recommendations.

The results of both the Level 1 screening and Level 2 evaluation were presented to the Policy Committee along with the 25-year financial projections. The Level 2 process resulted in a financially constrained list of projects recommended for the 25-year plan (see Table 4-1).

Results

With the TOP 2025 improvements, transit ridership increased by more than 14 percent. For the two strongest indicators of congestion on the roadway system (vehicle hours traveled and vehicle hours of delay), the TOP 2025 transportation system performs at congestion levels that are significantly less than the 2025 Baseline. Under the scenario with the TOP 2025 improvements, vehicle hours traveled are projected to decline by 12 percent and the hours of delay on the roadway system are projected to decline by 23 percent.

Performance of the TOP 2025 was also evaluated with respect to meeting the identified goals and objectives. All 27 objectives were met by the proposed list of transportation improvements, as summarized in Table 5-6.

The financial analysis presented in Chapter 6 demonstrates that the TOP 2025 highway and transit projects for the fiscally-constrained regional transportation plan will have sufficient revenues through a combination of existing revenue sources and additional revenue assumed to be in place over the next 25 years. The total identified funding needs included the estimated cost of the TOP 2025 projects of slightly more than \$3.6 billion along with system preservation needs for state highways identified as an additional \$1.05 billion over the life of the 25-year plan. The total identified need of almost \$4.7 billion exceeded the revenues that could be assumed to be in place from only existing sources.

In addition to the traditional FHWA, FTA, state and local contributions to TOP 2025 projects, two other sources of revenues were identified. The first is developer contributions, which may involve private financing of selected elements of projects, facilities or land donations. The other additional revenue source is generated by from the typical increases in the tax rates of state highway funding.

The assumptions used to project the additional State Highway Special Fund revenues are reasonable based on historical trends in tax rate increases over the last 25 years. Likewise, the assumption of an average developer contribution of 20 percent of potential developer funded projects, which will be developed in a forum outside of the TOP 2025, is also valid. As a result of these assumptions and projections of federal, state and local highway funding levels, the revenues are sufficient to fund the TOP 2025 recommendations.

The TOP 2025 recommendations define a transportation system for Oahu's future that will help to achieve the four goals adopted for the plan. The projects included in the TOP 2025 achieve these goals within the fiscal constraints of funding that will be available within the 25-year time frame of the plan.

1.0 Introduction

1.1 Purpose of the Transportation for Oahu Plan (TOP) 2025

As the designated metropolitan planning organization for the island of Oahu, the Oahu Metropolitan Planning Organization (OMPO) is responsible for carrying out the various requirements of the metropolitan transportation planning process. These requirements are mandated by the United States Department of Transportation as the means of establishing the eligibility of metropolitan areas for federal funds earmarked for ground transportation systems. One of these requirements is that each major urban area develops a multi-modal long-range plan that documents ground transportation projects selected for federal funding for a minimum time horizon of 20 years.

The first regional transportation plan was prepared in 1967 by the Oahu Transportation Planning Program, OMPO's predecessor, and the plan was called the *Oahu Transportation Study* (OTS). The OTS and various successor studies recommended many of the highway and transit improvements that have since been completed, including H-3, parts of H-1 and H-2, and improvements to major highways such as Likelike, Pali, Farrington, Kamehameha and Kalaniana'ole (see Section 2.3.1 and Figure 2-2 for a more thorough description and depiction of the current street and highway network).

The previous long-range transportation plan for Oahu, the *2020 Oahu Regional Transportation Plan (2020 ORTP)*, was adopted by OMPO in 1995. The *Transportation for Oahu Plan 2025 (TOP 2025)* updates the 2020 ORTP to respond to the changing transportation needs of Oahu and extends the planning horizon to the year 2025.

1.2 Planning Process

The TOP 2025 has been developed within the context of the comprehensive, cooperative and continuing (3C) planning process established and carried out by OMPO and its participating agencies. OMPO is the officially designated regional agency that must ensure that the 3C process addresses all federal concerns regarding various transportation modes on Oahu while satisfying the transportation needs of the state and county.

OMPO is composed of four parts: a Policy Committee, a Technical Advisory Committee (TAC), a Citizen Advisory Committee (CAC) and a staff.

The Policy Committee is the "heart" of the OMPO planning process. It determines the direction of the OMPO effort, considers and approves transportation planning issues and makes the final approval for OMPO matters.

The Technical Advisory Committee provides the technical input to OMPO's planning process. The TAC acts as the technical liaison between the Policy Committee and the OMPO Executive Director, provides advice to the Policy Committee and the OMPO

Executive Director on technical matters, and ensures the technical competence of the planning process.

The Citizen Advisory Committee was created by the Policy Committee in July 1977 to ensure effective public input into Oahu's transportation planning process. The CAC is a vehicle whereby public input can be solicited to advise the Policy Committee and the OMPO Executive Director on transportation planning issues.

For the TOP 2025 effort, two subcommittees were formed. The first was a Technical Task Force that reviewed the technical information developed by the Project Team (OMPO staff and consultants). The second was a CAC Subcommittee to assist the Project Team with the development of the public involvement program.

The TOP 2025 was developed through an intensive 12-month planning effort including the following tasks:

- Updated and extended the planning horizon to 2025 for land use and socioeconomic forecasts.
- Employed a new and improved travel demand forecasting model to estimate highway and transit system usage for the future study year of 2025.
- Developed goals, objectives and evaluation criteria/measures of effectiveness for use in selecting projects for inclusion in the TOP 2025.
- Compiled a list of past candidate projects from city and state sources.
- Received suggested projects from the public, newspaper articles and other public input sources.
- Prepared evaluation of candidate projects based on evaluation criteria and measures of effectiveness.
- Met regularly with the Citizen Advisory Committee (CAC) and their Subcommittee on Public Involvement to receive their input and discuss the most effective means of obtaining public input.
- Briefed and received input from groups with special transportation needs and from the general citizenry.
- Worked closely on technical aspects of the study with a TOP 2025 Task Force consisting of key individuals from city and state agencies and departments and a representative from the CAC.
- Reviewed key assumptions and work products with the OMPO Technical Advisory Committee.
- Reviewed policy issues and received direction from the OMPO Policy Committee at key decision points.

1.2.1 Federal Requirements

Current federal surface transportation legislation, enacted in 1998 as the Transportation Equity Act for the 21st Century (TEA-21), calls for transportation strategies in metropolitan regions to address a number of planning factors. This federal law also expanded public participation in the transportation planning process and required increased cooperation among the jurisdictions that own and operate the region's transportation system.

TEA-21 continues the intent established under the prior federal legislation, the Intermodal Surface Transportation Efficiency Act (ISTEA) enacted in 1992, to broaden and strengthen the ability of urban regions to link comprehensive planning programs with funding decisions for transportation projects. TEA-21 states:

“(1) FINDINGS. – It is in the national interest to encourage and promote the safe and efficient management, operation and development of surface transportation systems that will serve the mobility needs of people and freight and foster economic growth and development within and through urbanized areas, while minimizing transportation-related fuel consumption and air pollution. (2) DEVELOPMENT OF PLANS AND PROGRAMS. – To accomplish the objective stated in paragraph (1), metropolitan planning organizations designated under subsection (b), in cooperation with the State and public transit operators, shall develop transportation plans and programs for urbanized areas of the State. (3) CONTENTS. – The plans and programs for each metropolitan area shall provide for the development and integrated management and operation of transportation systems and facilities (including pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the metropolitan area and as an integral part of the intermodal transportation system for the State and the United States. (4) PROCESS OF DEVELOPMENT. – The process for developing the plans and programs shall provide for consideration of all modes of transportation and shall be continuing, cooperative, and comprehensive to the degree appropriate, based on the complexity of the transportation problems to be addressed.” (*Title 23, U.S.C., Section 134. – Metropolitan Planning, [a] General Requirements*).

TEA-21 requires the consideration of the following seven planning factors (*Title 23, U.S.C., Section 134, Metropolitan Planning, (f) Scope of Planning Process*):

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency.
2. Increase the safety and security of the transportation system for motorized and non-motorized users.
3. Increase the accessibility and mobility options available to people and for freight.

4. Protect and enhance the environment, promote energy conservation and improve quality of life.
5. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
6. Promote efficient system management and operation.
7. Emphasize the preservation of the existing transportation system.

Federal regulations require Oahu's regional transportation plan to have a minimum 20-year planning horizon, be fiscally constrained and be updated at least every five years. (Refer to 23 CFR, Part 450 for details of the federal regulations.) In order to conform to the requirement for a 20-year planning horizon, the TOP 2025 has a planning horizon of the year 2025. To comply with the requirements that the regional transportation plan be fiscally constrained, the plan includes an analysis of financial resources reasonably expected to be available to fund the transportation infrastructure projects that are included in the plan. Lastly, the TOP 2025 will need to be updated during 2005.

1.2.2 Participating Agencies

Although OMPO, as the designated agency responsible for the preparation of the regional transportation plan, functions as the lead agency, the development of the plan is a cooperative planning effort that includes significant involvement of agencies from the State of Hawaii and the City and County of Honolulu. These agencies include:

State of Hawaii

- Department of Transportation (HDOT)
- Department of Business, Economic Development and Tourism (DBEDT)
- Office of Planning (OP)

City and County of Honolulu

- Department of Transportation Services (DTS)
- Department of Planning and Permitting (DPP)

The various agencies are responsible for material used as input to the TOP 2025. The DBEDT provided population and economic projections for Oahu. Based on these projections, the DPP developed the socioeconomic forecasts used as input for the travel demand projections. In addition, DTS supplied information on the proposed Bus Rapid Transit (BRT) System from the *Major Investment Study / Draft Environmental Impact Statement, Primary Corridor Transportation Project* (MIS/DEIS for the BRT) and for City and County roadway projects. The HDOT provided information on many of the candidate state road projects. In addition, the HDOT will include the TOP 2025 results in the Statewide Transportation Plan and the Statewide Transportation Improvement Program (STIP).

1.2.3 Public Involvement

The public involvement portion of the transportation planning process engages the community and stimulates public awareness of the proposed project or plan. The process used during development of the TOP 2025 was an ongoing activity that provided complete and understandable information, gave timely notification of meetings and available information and reports, and reached the traditionally under-served stakeholders and special needs groups. The public input was carefully assessed, and the assessment was made available to the public. With the increase in personal computer use, providing information and reports to the public online was an effective addition to traditional methods of information dissemination.

The OMPO staff and consultants (the Project Team) worked with the OMPO Citizen Advisory Committee (CAC) TOP 2025 PIP Task Force to develop a Public Involvement Plan (PIP) that reflected recommendations contained in the *CAC's Report of the Subcommittee on the Oahu Regional Transportation Plan Public Involvement Plan* and *The OMPO Guide to Public Involvement*. The PIP defined an approach for the TOP 2025 process to gather input on Oahu's regional transportation needs and strategies to meet these needs. Consistent with the *OMPO Guide to Public Involvement*, the PIP for the TOP 2025 is part of OMPO's ongoing commitment to active public involvement in the regional transportation planning process and was designed to help members of the public understand the planning process for Oahu's major surface transportation efforts and how to participate effectively in that process. The PIP was revised based on CAC and staff review at several points during implementation.

Consistent with the PIP and *The OMPO Guide to Public Involvement*, the following goals were established for the TOP 2025 public involvement process:

- Effectively involve communities, groups and individuals, including those traditionally under-served by the existing transportation system.
- Provide the necessary information to the public in a timely manner and online.
- Effectively obtain public input through various means and venues including online.
- Provide clear responses to the public input obtained.

These goals were established to ensure that the TOP 2025 reflects and is responsive to the needs and concerns of the public.

1.2.3.1 Public Involvement Outreach Efforts

The following major activities were undertaken as part of the TOP 2025 public involvement process:

- The OMPO Web site was updated regularly with current information about the TOP 2025 process. Project information and comment forms were available for download and submitted by people who were unable to attend the regional or islandwide meetings.
- Groups with special needs were identified for outreach efforts. These included low-income groups (First to Work and Homeless Solutions), senior citizen groups (Seniors' Council), persons with disabilities (Hawaii Centers for Independent Living and Department of Transportation Services Committee for Accessible Transportation) and transportation industry groups (Hawaii Transportation Association and Mayor's Maritime Committee).
- Eight focus groups were conducted for those groups with special needs. An additional islandwide focus group composed of randomly selected individuals was held in January.
- Minority groups were informed about TOP 2025 meetings through press releases sent to 35 ethnic, foreign language and community publications.
- Six Regional Meetings were conducted during November 2000 to provide general information about the TOP 2025 process and gather input about projects being considered. Over 200 people attended the meetings. QuickPick Forms described each of 101 Level 1 projects and provided a table for submitting comments and priorities for projects.
- An islandwide telephone survey was conducted during the week of January 15, 2001. A random sample of 501 people was polled to gather general information about transportation policies and projects.
- A final islandwide meeting was held on March 13, 2001 to provide an update on the TOP 2025 process and information about the list of projects still under consideration. Over 200 people attended the meeting, and several hundred comment forms were received. A summary of the comments was provided to the Policy Committee.

The public input generated by this process was summarized and evaluated by the Project Team (OMPO staff and consultants) and was provided to the Policy Committee for consideration during the project screening and evaluation process (described in Chapter 3).

For more detailed information on the public involvement process and results, two reports are available under separate cover:

- *Public Input Summary Report for Six Level 1 Findings Regional Meetings*
- *ORTP Islandwide Meeting and Summary Report*

1.2.3.2 Environmental Justice Efforts

The TOP 2025 integrates environmental justice into all aspects of OMPO's long-range planning. This is in compliance with Title VI of the Civil Rights Act of 1964 and associated regulations and policies and strives to prohibit discrimination on the basis of race, income, age or disability. The TOP 2025 seeks to assure that benefits and burdens are not inequitably distributed.

In order to assure input from minority, low income and disabled communities, special efforts were made to include groups with special needs in the TOP 2025 public involvement process. As described in Section 1.2.3.1, the following groups were included in focus group sessions to obtain first-hand information on their needs and their input on candidate projects:

- Low-income groups (First to Work and Homeless Solutions)
- Senior citizen groups (Seniors' Council)
- Minority groups through information to 35 ethnic, foreign language and community publications.

The TOP 2025 process included an analysis of the potential transportation benefits and environmental impacts of the TOP 2025. The results of this analysis are presented in Chapter 5.

1.3 Goals and Objectives

The goals and objectives of the TOP 2025 were developed at the outset of the study and reflect the issues and concerns raised by participants in the study. The following issues were part of the 2020 ORTP and were judged to continue to be reasonable for the TOP 2025 planning process:

- Transportation Services
- Quality of Life
- Community Responsibility
- Demand Management

As summarized in Table 1-1, a system goal was adopted by the OMPO Policy Committee for each of the four major issues for the TOP 2025. A series of objectives were then developed that would accomplish each of the system goals. The System Goals and Objectives from the 2020 ORTP were used as a starting point for the discussions; the objectives adopted by the OMPO Policy Committee for the TOP 2025 reflect the current philosophy of OMPO for the future transportation network of Oahu. The seven planning factors dictated by the TEA-21 legislation were also reviewed in formulating the final goals and objectives for the TOP 2025.

Table 1-1
Goals and Objectives for the Transportation for Oahu Plan 2025

Transportation Services System Goal: Develop and maintain Oahu's islandwide transportation system to ensure efficient, safe, convenient and economical movement of people and goods.	
Objectives:	
# 1	Increase peak period person-carrying capacities on Oahu's transportation network.
# 2	Provide convenient and cost-effective transit service to Oahu transit riders.
# 3	Plan, design, construct and operate highway and transit facilities and service to communities on Oahu in a cost-effective manner.
# 4	Encourage the availability of adequate public and private services between Waikiki, the airport and other tourist destinations.
# 5	Promote intermodal efficiency of harbor terminal facilities, airport terminal facilities and land transportation systems.
# 6	Ensure that no person shall, on the grounds of race, color, sex, national origin, age, physical handicap or economic status, be excluded from reasonable access to transportation services, as provided for by federal, state and local legislation.
# 7	Ensure user and community safety in the physical design and operation of transportation facilities.
# 8	Ensure that Oahu's transportation system is planned, designed, constructed and operated in an integrated and cost-effective manner.
# 9	Enhance the performance of Oahu's transportation system through the use of operation management strategies, such as Intelligent Transportation System (ITS), Transportation System Management (TSM) and Transportation Demand Management (TDM).
#10	Enhance the integration and connectivity of the regional transportation system, across and between alternative modes.
#11	Promote planning, design and construction of transportation facilities and systems to support economic development for Oahu's business community.
#12	Provide major rehabilitation/renewal/modernization of facilities in sufficient magnitude to ensure continued effective operation.

(continued)

Table 1-1 (continued)

Quality of Life System Goal: Develop and maintain Oahu's transportation system in a manner that maintains environmental quality and community cohesiveness.	
Objectives:	
#13	Develop and maintain Oahu's transportation system to meet noise, air and water quality standards set by federal, state and local agencies.
#14	Preserve Oahu's cultural integrity, sensitive natural resources, including beaches and scenic beauty and sea and mountain vistas.
#15	Develop and maintain "low-energy" transportation facilities, including bikeways, walkways and other energy-efficient elements which can be safely integrated with other transport modes.
#16	Encourage energy conservation in transportation.
#17	Minimize disruption of existing neighborhoods due to transportation system construction.
#18	Ensure that transportation facility design and maintenance are compatible with the existing and planned physical and social character of new and existing developments.
#19	Maintain and upgrade the existing and future transportation system in a manner that is aesthetically pleasing, including incorporation of landscaping and tree planting.
#20	Develop transportation contingency plans for energy shortages, natural and manmade disasters and other emergencies that would impact the transportation system.
#21	Planning for transportation facilities in Waikiki should reflect the Pedestrian First Policy as adopted by the Joint Waikiki Task Force in 1999.

(continued)

Table 1-1 (continued)

Community Responsibility System Goal: Develop and maintain Oahu's transportation system in a manner that is sensitive to community needs and desires.	
Objectives:	
#22	Maintain and develop the transportation system to reinforce Oahu's planned population distribution and land use development policies through coordinated efforts of the public and private sectors, including the Sustainable Community Plan (SCP) planning efforts.
#23	Encourage innovation in planning, design and maintenance of transportation services and facilities that supports community goals.
#24	Base transportation improvements for Oahu on a cooperative, comprehensive and continuing planning process with emphasis on community involvement.
Demand Management System Goal: Develop a travel demand management system for Oahu that optimizes use of transportation resources.	
Objectives:	
#25	Encourage increases in systemwide ride sharing on Oahu.
#26	Maximize the efficient use of the transportation system.
#27	Encourage programs that reduce use in single occupancy vehicle travel and vehicle miles traveled.

1.4 Elements of the TOP 2025

The TOP 2025 consists of projects that fall into the following general categories to help achieve the adopted goals and objectives for the TOP 2025:

- Congestion Relief Projects
- Transit and Alternative Modes Projects
- Operations and Safety Projects
- Second Access Projects
- Projects that Support Community Planning Goals
- Projects that Provide Local Circulation and/or Community Access

Chapter 2 of this document provides background information regarding socioeconomic and growth trends for Oahu and the implications of growth projections for the transportation system. Chapter 3 discusses the process that was used to identify potential projects for the TOP 2025 and the screening and evaluation that were conducted to determine a final list of recommendations. Chapter 4 describes the recommended projects that can be constructed within the financial constraints of the TOP 2025. Chapter 5 presents information about how the transportation system is expected to perform with the implementation of the recommended list of projects. Chapter 6 then provides the funding projections for the TOP 2025, and conclusions are given in Chapter 7.

1.5 Relationships to Other Plans

The TOP 2025 has been designed to identify and respond to transportation demands and potential deficiencies at the major travel corridor level. It includes projects and programs that address regional transportation issues and provides both specific and conceptual improvements that are developed on a regional scale. The TOP 2025 is not intended to serve as a replacement for the circulation elements of Development Plans, Sustainable Community Plans or large project master plans. In fact, the TOP 2025 actively seeks to reinforce and support the existing plans. For example, plans reflecting the “Keep the Country Country” philosophy led directly to the screening out of a number of candidate projects on the windward side, while circulation plans for Kapolei led to the inclusion of a number of projects in the Ewa/Kapolei area.

Inclusion of a project in the TOP 2025 allows a project to be eligible for federal funding and to begin a series of more detailed evaluations. During the detailed programming for funding, project refinement and evaluation phases, a project could be modified, postponed or terminated for any number of reasons, such as environmental impact, cost or lack of public support.

2.0 The Regional Setting

2.1 Geographic Setting

The state of Hawaii, located more than 2,000 miles west-southwest of California, is a 1,523-mile chain of islets and eight main islands in the Pacific Ocean. Stretching from northwest to southeast, the major islands are Niihau, Kauai, Oahu, Molokai, Lanai, Kahoolawe, Maui and the Big Island of Hawaii. Figure 2-1 shows a map of the entire state of Hawaii. With a land area of approximately 600 square miles, Oahu is not the largest of the eight main islands, but it is the most populous in the Hawaiian Archipelago and is the location of the capital city, Honolulu.

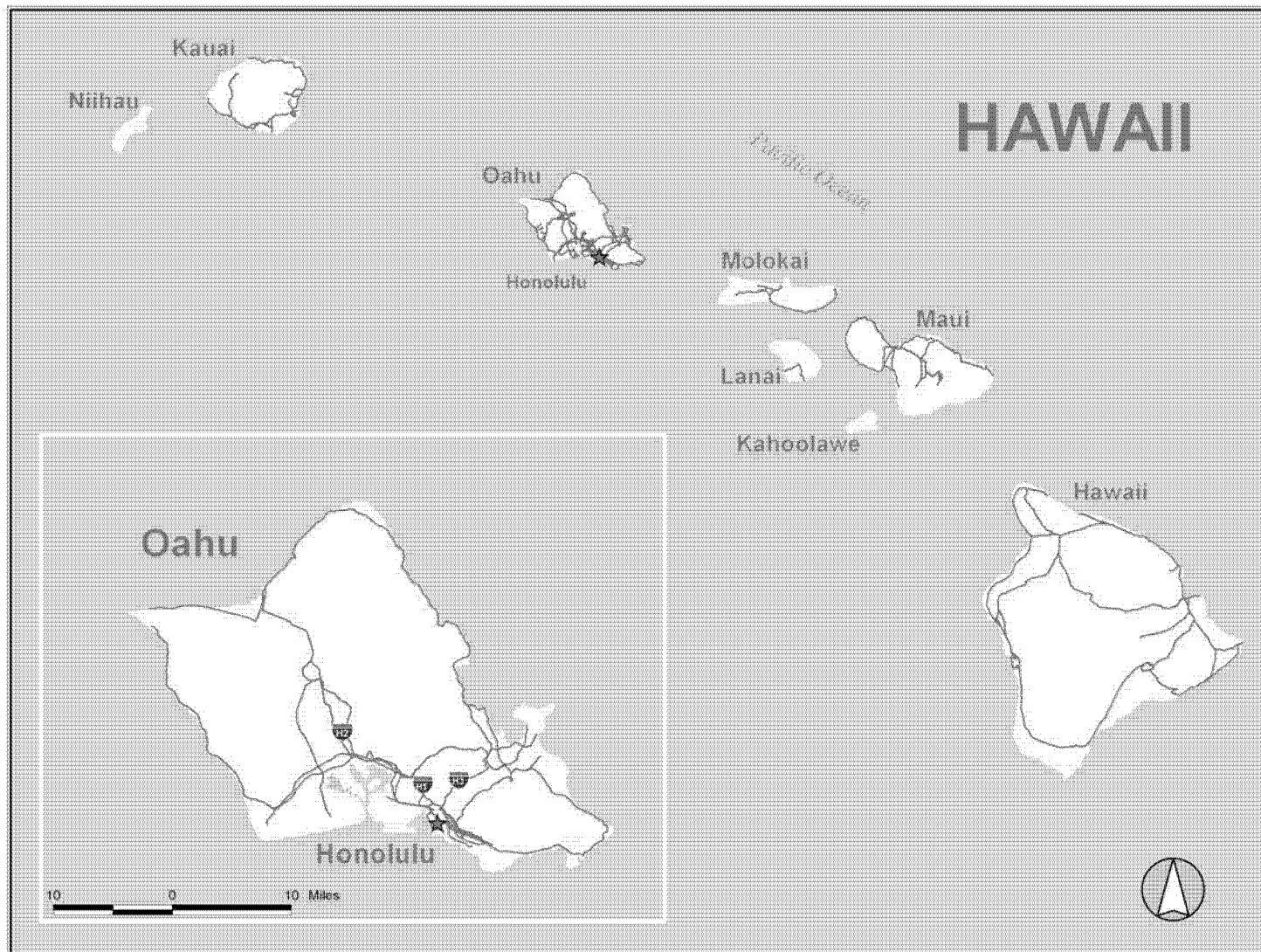
2.2 Socio-Economic Conditions

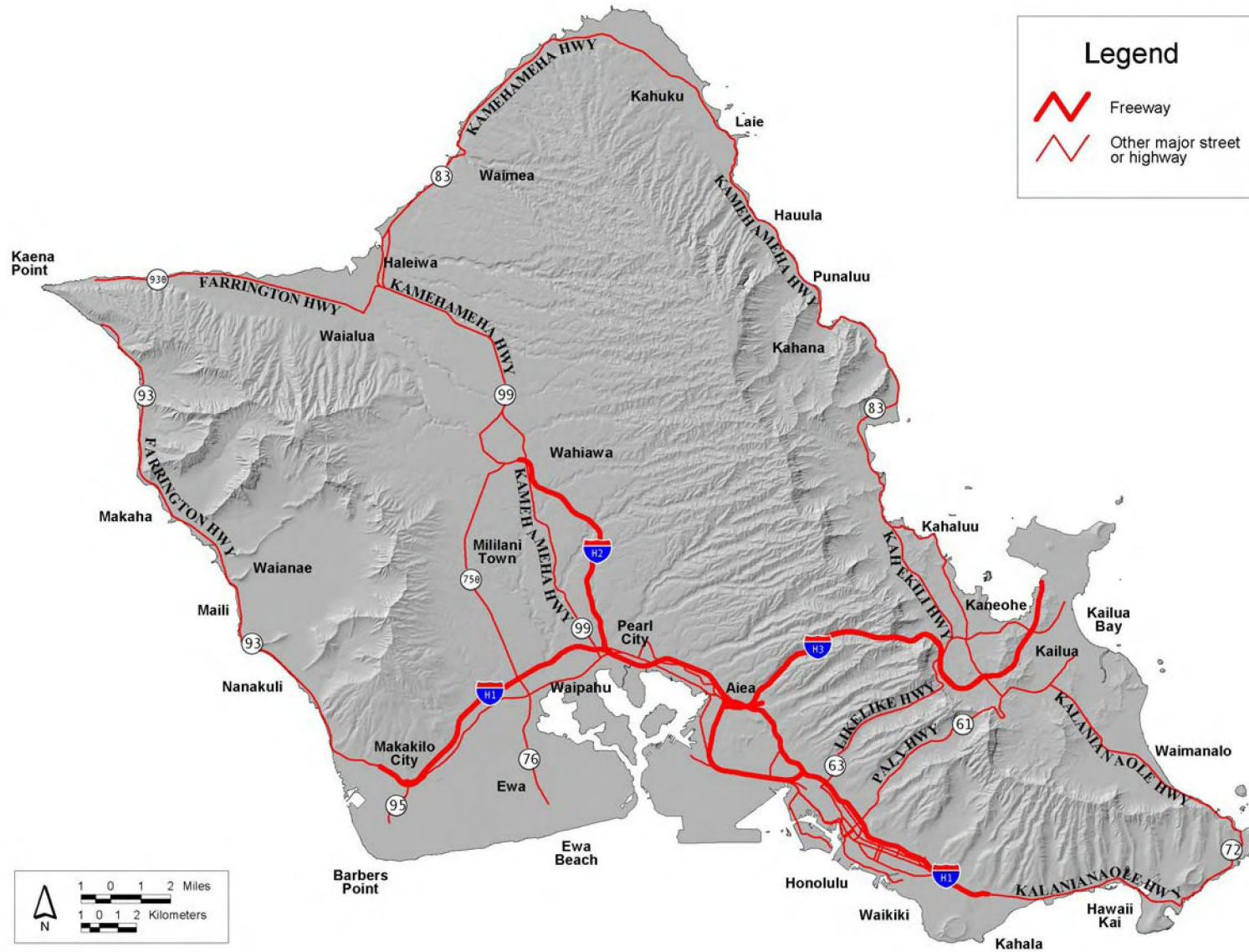
Because much of the island is mountainous, only slightly more than 50 percent of the total area is potentially developable. The majority of existing development has occurred along the south edge of the island stretching from Ewa in the west to Hawaii Kai in the east. Please refer to Figure 2-2 for the location of these areas.

The 1999 population on Oahu is 872,915 with a large amount of ethnic diversity. For 1998, the population is comprised of the following ethnic groups:

White	30.86%
Black	3.59%
American Indian	0.50%
Asian and Pacific Islander	65.05%
Hispanic (of any race)	7.40%

Oahu is the center of business and government for the state of Hawaii, and downtown Honolulu is Hawaii's financial center. The military maintains active bases on Oahu, including the Pearl Harbor Naval complex and the unified military command for the Pacific (CINCPAC). Tourism is a major industry for Hawaii, and Oahu is the main destination for most visitors to Hawaii. Visitor arrivals in 1998 totaled more than 4.7 million for the island of Oahu.





The 1999 employment for Oahu totals more than 485,000 in the following types of jobs:

Military	44,608
Government	37,516
Hotel	17,482
Agriculture	4,714
Transportation/Communications/Utility	40,453
Industrial	37,670
Fiscal	32,846
Service	159,163
Retail	89,332
Construction	21,708

2.3 Year 2000 Transportation System

2.3.1 Street and Highway System

The roadway system on Oahu is maintained by the Hawaii Department of Transportation and by the appropriate departments at the City and County of Honolulu. The State highway system includes all freeways and major highways connecting various parts of the island. The City and County street system consists of the remainder of the public roadways on the island, including arterial, collector and local streets.

The State highway system consists of four freeways totaling 55 lane-miles and about 200 lane-miles of other major highways. Figure 2-2 illustrates the existing highway system serving the island. In addition, there are about 1,200 lane-miles of other public streets under City jurisdiction. The street network and development patterns on Oahu are heavily constrained by mountainous topography. Because of these physical constraints, roadways are primarily located in the coastal areas between mountains and the ocean. The dominant highways generally parallel the coastline and carry Koko Head/Ewa, i.e., east-west, traffic.

Oahu's street and highway system consists of the following types of facilities:

- Freeways. High-speed facilities with total access control (access permitted only at grade-separated interchanges).
- Expressways. High-speed, limited-access facilities; no driveways or parking, but signals are allowed.
- Arterials. Driveways and parking allowed with major arterials having minimal driveways and parking with wide signal spacing and minor arterials providing more access at driveways, more signals and lower speeds.
- Other. Collectors, local streets and ramps.

The freeways on the State highway system – Interstate Route H-1, Interstate Route H-2, Interstate Route H-3 and Moanalua Freeway – are supplemented by expressways (portions of Kahekili Highway, Kalanianaʻole Highway, Pali Highway and Likelike Highway) and a number of other major highways that serve to connect key areas of the island. These expressways and other major highways include the following:

- Pali Highway and Likelike Highway, which connect Honolulu with Windward Oahu
- Kalanianaʻole Highway, which encircles the eastern tip of Oahu
- Farrington Highway, which connects the Waianae and Waipahu areas
- Kamehameha Highway, which connects the Pearl Harbor area to Waipahu, Wahiawa, the North Shore and Windward Oahu

There are also a number of major streets and highways within the Primary Urban Center (PUC). The PUC extends from Pearl City to Waiʻālae-Kahala and lies between the Koolau Mountain Range and the coastline. In 1990, the PUC population was 432,000 people (52 percent of the island total) and employment was 398,164 jobs, or 87 percent of the total civilian employment on the island. The PUC is also the center of government, business, economic and cultural activities, including most of the major employment centers on the island, such as much of the Pearl Harbor Naval Station and Waikiki. The PUC major streets and highways include the following:

Nimitz Highway	Kalakaua Avenue	Alakea Street
Ala Moana Boulevard	Salt Lake Boulevard	Bishop Street
Dillingham Boulevard	Puuloa Road	Punchbowl Street
King Street	Kalihi Street	Pensacola Street
Beretania Street	Sand Island Access Road	Piikoi Street
Kapiolani Boulevard	Ward Avenue	University Avenue

In most cases, the density of the street and highway system is proportional to the level of development in the area. These streets and highways, in combination with the transit services described in Section 2.3.2 below, support the majority of Oahu’s economic activities.

2.3.2 Transit System

Public transportation is an important component of the transportation system on Oahu. It serves as an alternative to automobile travel, carrying a level of patronage that is capable of assisting in the reduction of roadway capacity requirements as well as reductions in air and noise pollution and energy consumption. The transit system also offers mobility to those without access to an automobile, including the elderly, persons who are disabled and children below driving age.

TheBus system, a regularly scheduled, fixed-route public transit service, is administered by the Department of Transportation Services (DTS) at the City and County of Honolulu, and the vehicles are owned by the City. Operations of TheBus are conducted by Oahu Transit Services, Inc. (OTS), a sole purpose instrumentality created as a non-profit organization.

TheBus maintains a current fleet of 525 buses and operates on 89 routes extending to urban, suburban and rural areas throughout Oahu. The transit system operated by TheBus includes five route types:

- Urban Trunk Routes. Provide direct bus service along the Ewa/Koko Head arterials of the central portion of the PUC, operating with a high level-of-service and connecting neighborhoods located on both sides of the Downtown area. Special types of urban trunk service (limited stop service) have also been added to provide limited stop service from Waipahu to the University of Hawaii at Manoa and along the Waianae coast. Limited stop service is also provided between Kalihi and Downtown along School Street. More than half of the system's daily boardings are on urban trunk routes.
- Urban Collector Routes. Provide short-range circulation from neighborhoods surrounding downtown Honolulu that are not directly served by urban trunk routes. Most operate at headways of 15 to 30 minutes in the peak periods and 30 to 60 minutes in the off-peak periods.
- Suburban Trunk Routes. Provide a direct, multi-stop connection between the suburban neighborhoods outside of the PUC and the activity centers located within the PUC. Most operate at headways of 10 to 20 minutes in the peak periods and 20 to 30 minutes in the off-peak periods.
- Suburban Feeder Routes. Provide access to the transit system for neighborhoods outside of the PUC as well as short-range circulation within suburban neighborhoods. Most operate at headways of approximately 60 minutes.
- Express Routes. Provide direct non-stop connections between the outlying suburban neighborhoods and the major activity centers within the PUC; only scheduled during peak and shoulder peak periods.

TheBus route network is based on a modified “radial” route pattern that focuses transit service to dominant employment and retail centers in the PUC, while providing service along major arterial streets enroute to these centers. Because of the locations of these centers, the area from Middle Street to Kahala has the most frequent bus coverage, with many of the bus lines coming together on a few parallel roadways. Daily ridership is approximately 189,000, and approximately 95 percent of the population lives within walking distance of a bus route (defined as three-fourths of a mile to a bus stop).

To complement the fixed-route bus service, the City provides a comparable paratransit service, called TheHandi-Van. TheHandi-Van system operates 100 vehicles, is demand-responsive and provides curb-to-curb service upon request specifically for semi-

ambulatory and non-ambulatory persons. TheHandi-Van is similar to TheBus in that the DTS administers the program while OTS operates the service.

2.4 Existing Transportation Conditions

Congested operating conditions occur regularly during the morning and afternoon peak periods on the major highways and streets in many parts of the island. Traffic on freeways through the PUC typically operates stop-and-go in the peak periods, and parallel arterials carry high volumes of traffic and operate at low levels of service. At signalized intersections along the arterials, motorists typically stop for more than one signal cycle. Similar conditions occur during peak periods in outlying developed areas and on major corridors in and out of the PUC.

Travel on Oahu is generated by resident households, port operations, the airport, other commercial activities and visitors. As part of the TOP 2025 planning process, a travel demand model was applied to simulate the choices made by residents, businesses and visitors regarding the nature, number, mode, time-of-day and geographic orientation of trips that are made on a typical weekday. This travel demand model was developed by OMPO prior to the TOP 2025 planning process and was based on data obtained in extensive surveys of Oahu households, transit riders and air passengers.

Existing conditions in the year 2000 were estimated by the OMPO travel demand model using a coded network that represents the existing roadway system and transit system. These estimates indicate the amount of travel between different parts of the island, the share of this travel that will occur on different modes, and the traffic volumes and transit ridership that result on individual streets and transit lines.

Land use data were prepared for a set of 762 small sub-areas of the island called Transportation Analysis Zones (TAZs). (Details of the land use data are included in Appendix A.) The modeling programs estimate the number of trips between each pair of zones and then allocate these zone-to-zone trips to the available travel modes, highway facilities and transit services. The OMPO travel demand model is an application of the MINUTP software program and uses these major steps in the model for residential travel activity: trip generation, trip distribution and mode choice. In addition, there are sub-models for the following special trip types: air passengers, trucks and visitors. Finally, all trips are factored into time periods and then assigned to the roadway or transit network.

The year 2000 travel patterns for a typical weekday were estimated using the OMPO travel demand model. More than 3 million trips between TAZs per day are estimated to occur on Oahu. These trips are broken down into the trip purposes shown in Table 2-1.

Table 2-1
Year 2000 Daily Person Trips

Trip Purpose	Daily Person Trips
Resident Trips	
Trips by residents to and from work	962,000
Trips by residents while at work	175,000
Trips by residents to and from school/university	242,000
Trips by residents to and from shopping/other	943,000
Trips by residents with neither end at home nor at work	442,000
Other Trips	
Truck trips	43,300
Air passenger ground access trips	60,400
Visitor trips	393,300
Total Person Trips per Day	3,261,000

Note: All numbers have been rounded.

For the trips by residents, the model estimates the travel mode that each person will use to make the trip. For the 2,764,000 person trips between TAZs generated by residents on a daily basis on Oahu, the travel model estimates that the modes shown in Table 2-2 are used to make these trips. Drive trips are further segregated by occupancy assumptions (1 person, 2 persons, 3 or more persons) for conversion to vehicle trips.

Table 2-2
Year 2000 Resident Trip Mode Share

Mode of Travel	Daily Person Trips by Residents	% of Total Trips
Trips by drive mode	2,281,000	82%
Trips by transit mode	189,000	7%
Trips by bicycle and walking	294,000	11%
Total Daily Person Trips by Residents	2,764,000	

Note: All numbers have been rounded.

The auxiliary walk and bike mode is a new component of the OMPO travel demand model, compared to the past models that were used. The share of trips by bicycle and walking is consistent with travel to work characteristics reported for Hawaii in the 1990 Census Transportation Planning Package (CTPP). The CTPP data for the State of Hawaii show that 11.6 percent of work trips occur by modes other than auto and public transit.

Truck trips and air passenger ground access trips are represented as vehicle trips in the OMPO travel demand model. However, the model segregates air passenger trips into auto, taxi, shuttle bus and tour bus modes. A vehicle occupancy assumption is then applied to convert person trips into vehicle trips. Visitor trips are organized into six modes so that the model recognizes these trips as vehicle, transit and walk demand.

From the travel demand model, the statistics in Table 2-3 summarize how Oahu's transportation system is operating for existing conditions.

Table 2-3
Existing (Year 2000) Travel Conditions on Oahu

Facility Type	VMT per Day*	VHT per Day*	Hours of Delay*
Freeway	5,126,977	129,908	51,641
Expressway	1,395,418	30,715	8,180
Arterial	3,630,631	148,794	50,745
Other	2,746,989	140,493	39,462
Total	12,900,015	449,910	150,028

**Explanation of travel statistics:*

- *VMT per day: Vehicle miles traveled per day. (Traffic assigned to roadway facility multiplied by facility length in miles.)*
- *VHT per day: Vehicle hours traveled per day. (Traffic assigned to roadway facility multiplied by travel time for each travel period: a.m. peak, p.m. peak and midday.)*
- *Hours of delay: Difference between VHT using the actual congested travel times and what the VHT would be if all roadway facilities operated at the free-flow travel time.*

2.5 Growth and Development Patterns and Goals

The TOP 2025 has been developed for a horizon year of 2025, in compliance with federal requirements that the regional transportation plan encompass a long-range planning horizon of at least 20 years. As such, the plan has been developed based on socioeconomic and land use forecasts provided by the City and County of Honolulu Department of Planning and Permitting for the year 2025 which were based on State DBEDT projections. The 2025 land use forecasts are based on development patterns that are consistent with policies articulated in the City's *General Plan* and the more specific efforts in the following plans by area of the island:

- *East Honolulu Sustainable Communities Plan (April 1999)*
- *North Shore Sustainable Communities Plan (May 1999)*
- *Koolaupoko Sustainable Communities Plan (February 1999)*
- *Ko'olau Loa Sustainable Communities Plan (May 1999)*
- *Ewa Development Plan (August 1997)*
- *Wai'anae Sustainable Communities Plan (January 2000)*

- *Draft Primary Urban Center Development Plan (July 1999)*
- *Draft Central Oahu Sustainable Communities Plan (September 1999)*

These eight plans establish standards and guidelines for land use development and public facilities in the respective development plan areas, including land use designations.

Table 2-4 summarizes the overall socioeconomic projections for the island of Oahu. Data are presented for existing conditions and year 2025 projections for the following land use variables:

- Population
- Housing units
- Hotel rooms
- Employment by various categories

Data for 1999 were used as the existing conditions baseline for socio-economic data on Oahu, and this socio-economic information was used as input in the existing conditions (year 2000) travel demand model described in the previous section. The overall population is projected to increase by 18 percent from the existing level of 872,915 to 1,029,807 by the year 2025. Housing units are projected to increase at a higher growth with an overall increase of 26 percent from today to the year 2025. The higher growth rate in housing units corresponds to the trend of decreasing household size. Hotel rooms are projected to increase by 37 percent from 27,428 to 37,557.

Employment on the island of Oahu is projected to increase by 31 percent from 485,492 to 637,477 by the year 2025. Military employment is projected to show a slight decline with increase in the remaining employment categories. The highest growth rates are projected for employment in the hotel, service fiscal, service and retail sectors.

Table 2-4
Land Use for Oahu (Existing Year 2000 and Projected Year 2025)

Land Use Variable	Existing (2000)*	Projected (2025)	Difference	Percent Difference	Avg. Annual Growth Rate
Population Categories					
Group Quarters Population	33,891	33,892	1	0%	0.0%
Population without Group Quarters	839,024	995,915	156,891	19%	0.7%
Total Population	872,915	1,029,807	156,892	18%	0.7%

(continued)

Table 2-4 (continued)

Land Use Variable	Existing (2000)*	Projected (2025)	Difference	Percent Difference	Avg. Annual Growth Rate
Housing Units (Occupied and Vacant)	313,451	395,680	82,229	26%	0.9%
Occupied Households	294,764	370,412	75,648	26%	0.9%
Hotel Rooms	27,428	37,557	10,129	37%	1.3%
Employment Categories					
Military	44,608	39,995	-4,613	-10%	-0.4%
Government	37,516	44,635	7,119	19%	0.7%
Hotel	17,482	25,822	8,340	48%	1.6%
Agriculture	4,714	5,568	854	18%	0.7%
Transportation/ Communications/Utility	40,453	50,647	10,194	25%	0.9%
Industrial	37,670	50,814	13,144	35%	1.2%
Fiscal	32,846	45,888	13,042	40%	1.3%
Service	159,163	223,410	64,247	40%	1.4%
Retail	89,332	121,952	32,620	37%	1.3%
Construction	21,708	28,746	7,038	32%	1.1%
Total Employment	485,492	637,477	151,985	31%	1.1%

** - Data for 1999 were used as the existing conditions baseline for Oahu, and this socio-economic information was used as input in the existing conditions (year 2000) travel demand model.*

The projected growth was distributed to areas of the island based on the City's plans and policies for specific development areas. Table 2-5 summarizes the existing population data for year 2000 and the population forecast for the year 2025 by 23 districts for the island of Oahu. The projected change in population by district is shown in Figure 2-3.

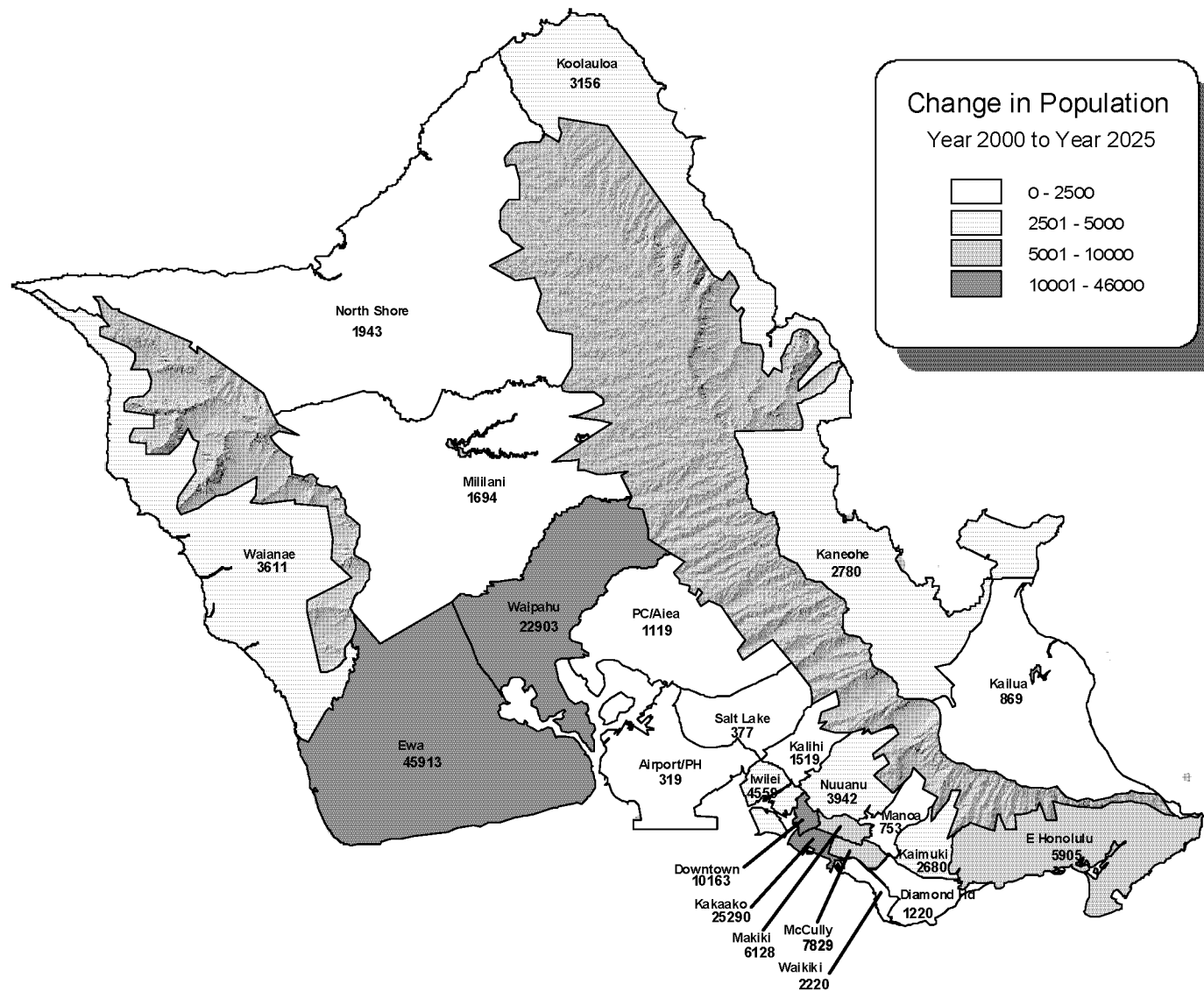
More than 45,000 of the projected population increase was assumed to occur in the Ewa District, with increases of more than 20,000 in the Waipahu and Kakaako Districts. These three districts account for slightly more than 94,000 of the population increase of 156,982 projected for the entire island.

Table 2-5
Population for TOP 2025 (Existing Year 2000 and Projected Year 2025)

District	Population		Change in Population (Year 2000 to 2025)	
	Existing (Year 2000)	Projected (Year 2025)	Difference	Percent Difference
1. Downtown	14,501	24,664	10,163	70%
2. Kakaako	5,965	31,255	25,290	424%
3. Makiki	35,028	41,156	6,128	17%
4. McCully	32,711	40,540	7,829	24%
5. Waikiki	21,900	24,120	2,220	10%
6. Diamond Head	25,411	26,631	1,220	5%
7. Kaimuki	28,669	31,349	2,680	9%
8. Manoa	18,942	19,695	753	4%
9. Nuuanu	31,611	35,553	3,942	12%
10. Kalihi	37,292	38,811	1,519	4%
11. Iwilei	20,756	25,315	4,559	22%
12. Airport/Pearl Harbor	29,582	29,901	319	1%
13. Salt Lake	49,328	49,705	377	1%
14. Pearl City/Aiea	74,617	75,736	1,119	1%
15. Waipahu	58,845	81,748	22,903	39%
16. Mililani	89,535	91,229	1,694	2%
17. Ewa	68,092	114,005	45,913	67%
18. Waianae	39,286	42,897	3,611	9%
19. North Shore	17,885	19,828	1,943	11%
20. Koolauloa	13,208	16,364	3,156	24%
21. Kaneohe	66,215	68,995	2,780	4%
22. Kailua	49,256	50,125	869	2%
23. East Honolulu	44,280	50,185	5,905	13%
Totals	872,915	1,029,807	156,892	18%

The projected employment growth also was distributed to appropriate areas of Oahu. Table 2-6 summarizes the existing and projected employment data by 23 districts for the entire island. The projected change in employment by district is shown in Figure 2-4.

The highest growth area for employment is projected to be the Ewa District, with a projected increase of more than 200 percent over the current level. The downtown district and Airport/Pearl Harbor District will continue to be major employment centers in the future, but growth rates will be lower than the Ewa District since these two districts have about one-quarter of existing employment on the island.



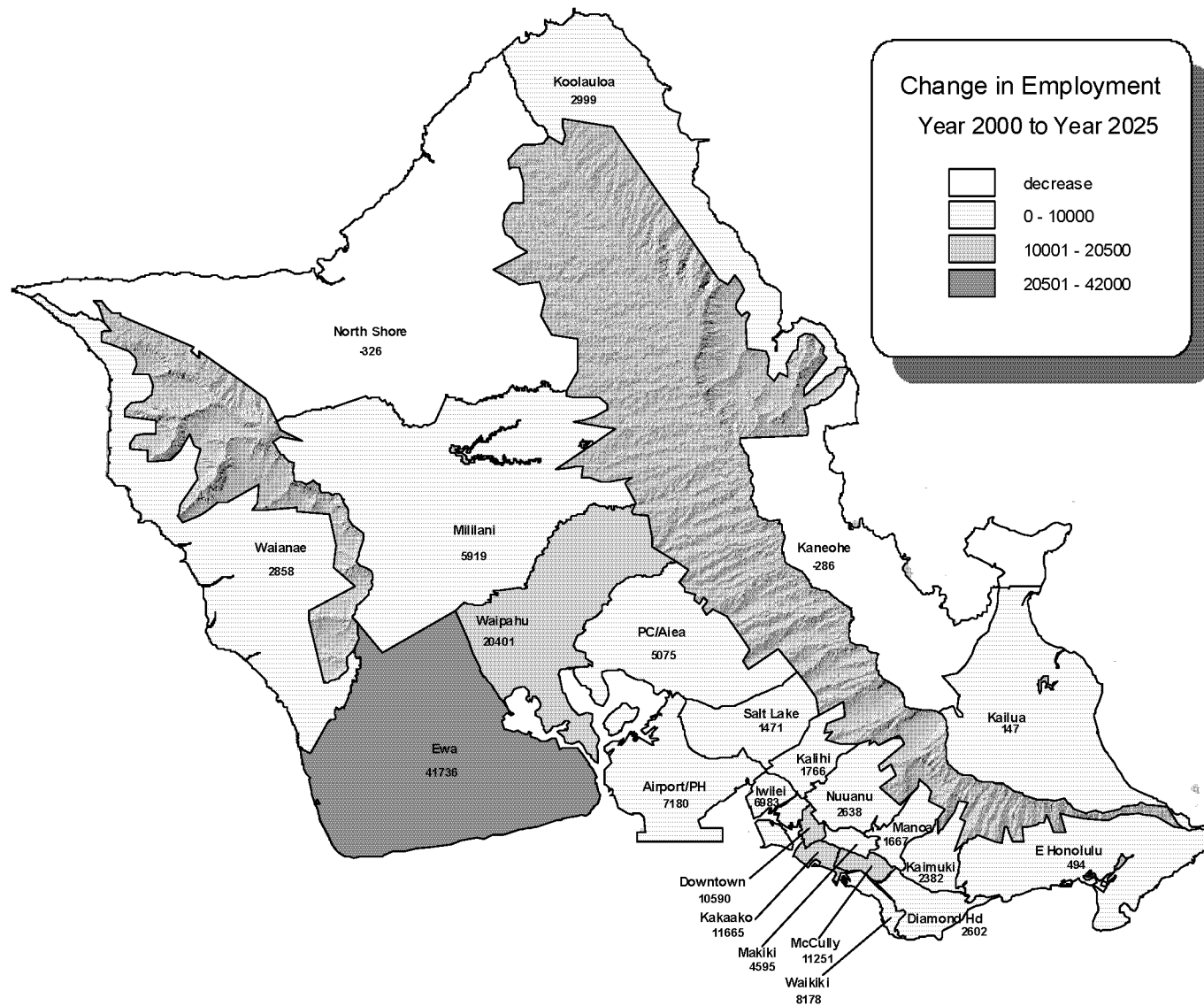


Table 2-6
Employment for TOP 2025 (Existing Year 2000 and Projected Year 2025)

District	Employment		Change in Employment (Year 2000 to 2025)	
	Existing (Year 2000)	Projected (Year 2025)	Difference	Percent Difference
1. Downtown	60,614	71,204	10,590	17%
2. Kakaako	28,637	40,302	11,665	41%
3. Makiki	20,678	25,273	4,595	22%
4. McCully	32,589	43,840	11,251	35%
5. Waikiki	40,997	49,175	8,178	20%
6. Diamond Head	12,644	15,246	2,602	21%
7. Kaimuki	8,225	10,607	2,382	29%
8. Manoa	13,601	15,268	1,667	12%
9. Nuuanu	9,951	12,589	2,638	27%
10. Kalihi	5,888	7,654	1,766	30%
11. Iwilei	33,331	40,314	6,983	21%
12. Airport/Pearl Harbor	75,232	82,412	7,180	10%
13. Salt Lake	9,652	11,123	1,471	15%
14. Pearl City/Aiea	27,763	32,838	5,075	18%
15. Waipahu	14,810	35,211	20,401	138%
16. Mililani	24,049	29,968	5,919	25%
17. Ewa	14,898	56,634	41,736	280%
18. Waianae	6,590	9,448	2,858	43%
19. North Shore	4,125	3,799	(326)	-8%
20. Koolauloa	5,236	8,235	2,999	57%
21. Kaneohe	17,768	17,482	(286)	-2%
22. Kailua	12,584	12,731	147	1%
23. East Honolulu	5,630	6,124	494	9%
Totals	485,492	637,477	151,985	31%

These data on existing and projected land use also were allocated on a more detailed level to Traffic Analysis Zones (TAZs) that are part of the travel demand forecast model. The detailed land use information by TAZ for existing conditions of year 2000 is included in Table A-1 of Appendix A. Table A-2 in Appendix A provides the land use forecasts for the year 2025 by TAZ, and the TAZ boundaries are presented on maps in the final section of Appendix A.

2.6 Committed Transportation Improvements

One of the initial steps in looking forward to the year 2025 was the identification of projects that are "committed" and therefore have a high probability of being implemented. These committed projects were added to the computerized network that describes the current (year 2000) highway and transit networks, and this network of facilities is the 2025 Baseline network. The projects that were judged to have funding already in place are described in the first section of Chapter 3.

2.7 Future Transportation Challenges

The socioeconomic characteristics and growth trends previously discussed have significant implications relative to the transportation system. Projected increases in resident population, housing units, employment and tourism have the potential to affect travel patterns in a number of ways. The OMPO travel demand model was first applied to predict how travel patterns will change if only the currently committed transportation improvements are implemented. Table 2-7 shows how person trips are predicted to change when the land use assumptions for 2025 are used in the travel demand model.

Table 2-7
Change in Daily Person Trips (Existing Year 2000 to 2025 Baseline)

Trip Purpose	Daily Person Trips		Change in Person Trips	
	Existing (Year 2000)	2025 Baseline	Difference	Percent
Resident Trips				
Trips by residents to and from work	962,000	1,249,000	287,000	30%
Trips by residents while at work	175,000	218,000	43,000	25%
Trips by residents to and from school/university	242,000	301,000	59,000	24%
Trips by residents to and from shopping/other	943,000	1,178,000	235,000	25%
Trips by residents with neither end at home nor at work	442,000	552,000	110,000	25%
Other Trips				
Truck	43,300	55,200	11,900	27%
Air Passenger Ground Access	60,400	77,900	17,500	29%
Visitor	393,300	504,200	110,900	28%
Total Person Trips	3,261,000	4,135,300	874,300	27%

Note: All numbers have been rounded.

Travel demand increases for all trip purposes between years 2000 and 2025, with total person trips changing by 27 percent. Trips by residents to and from work represent the most significant change, with an increase of 287,000 daily trips.

Table 2-8 shows how the mode share for trips by residents in the 2025 Baseline conditions will compare to existing conditions in the year 2000. As can be seen in this table, the mode share percentages are projected to remain constant from today's conditions to a year 2025 scenario that has no significant transit investments.

Table 2-8
Mode Share for Trips by Residents (Existing Year 2000 to 2025 Baseline)

Mode	Year 2000 Daily Person Trips		2025 Baseline Daily Person Trips	
	Number*	Percent*	Number*	Percent*
Driving	2,281,000	82%	2,876,000	82%
Transit	189,000	7%	239,000	7%
Bicycle and walking	294,000	11%	383,000	11%
Total Person Trips	2,764,000	100%	3,498,000	100%

*Note: All numbers have been rounded.

The following three tables show how the travel statistics of vehicle miles traveled (VMT), vehicle hours traveled (VHT) and vehicle hours of delay are projected to change with no transportation investments beyond the baseline projects for 2025.

Table 2-9
Change in VMT per Day (Existing Year 2000 to 2025 Baseline)

Facility Type	VMT per Day*		Change in VMT	
	Year 2000	2025 Baseline	Absolute	Percent
Freeway	5,126,977	6,782,404	1,655,427	32%
Expressway	1,395,418	1,771,805	376,387	27%
Arterial	3,630,631	5,412,696	1,782,065	49%
Other	2,746,989	3,723,286	976,297	36%
Total	12,900,015	17,690,191	4,790,176	37%

*VMT per day = Vehicle miles traveled per day.

(Traffic assigned to roadway facility multiplied by facility length in miles.)

The arterial street system is projected to experience the greatest increase in vehicle miles traveled when comparing the year 2000 and 2025 Baseline scenarios. Nearly 1.8 million additional VMT on arterials represents an increase of almost 50 percent. The freeway system is estimated to accommodate the most VMT among all facility types for both year 2000 and the 2025 Baseline conditions. Overall, VMT increases by 35 percent, which is greater than the 27 percent increase in person trips shown in Table 2-7. This suggests a related increase in average trip length.

Table 2-10
Change in VHT per Day (Year 2000 to 2025 Baseline)

Facility Type	VHT per Day*		Change in VHT	
	Year 2000	2025 Baseline	Absolute	Percent
Freeway	129,908	224,630	94,722	73%
Expressway	30,715	48,362	17,647	57%
Arterial	148,794	297,498	148,704	100%
Other	140,493	213,965	73,472	52%
Total	449,910	784,455	334,545	74%

*VHT per day = Vehicle hours traveled per day.

(Traffic assigned to roadway facility multiplied by travel time for each travel period: a.m. peak, p.m. peak and midday.)

The change in daily vehicle hours of travel between the year 2000 and the 2025 Baseline scenario provides an indication of how increased travel demand will affect roadway congestion. With increased demand and no improvements made to the roadway system, overall roadway VHT will increase by 74 percent. The arterial street system is expected to account for the greatest amount of VHT in the year 2025, representing twice as much travel time as year 2000.

Table 2-11
Change in Hours of Delay (Year 2000 to 2025 Baseline)

Facility Type	Hours of Delay*		Change in Delay	
	Year 2000	2025 Baseline	Absolute	Percent
Freeway	51,641	120,843	69,202	134%
Expressway	8,180	19,748	11,568	141%
Arterial	50,745	152,590	101,845	201%
Other	39,462	74,777	35,315	89%
Total	150,028	367,958	217,930	145%

*Hours of delay: Difference between VHT using the actual congested travel times and what the VHT would be if all roadway facilities operated at the free-flow travel time.

Vehicle delay represents the additional time spent traveling due to roadway congestion. Between year 2000 and the 2025 Baseline scenario, overall delay on the Oahu roadway system is projected to increase significantly. While the freeway system experiences the most delay in year 2000, the arterial system is estimated to change most dramatically and exhibit the highest amount of delay in year 2025. Delay on freeways and expressways is also expected to increase by well over 100 percent from existing conditions to the 2025 Baseline scenario.

With no transportation investments beyond the 2025 Baseline projects, congestion levels are projected to increase substantially on the roadway system. Hours of delay are

projected to more than double over existing levels. Clearly, additional transportation investment will be needed to respond to the planned growth on Oahu.

2.8 Transportation Funding Outlook

The revenue sources available to fund the transportation improvements for the TOP 2025 will include existing sources of federal grants from the Highway Trust Fund, state revenues from the Highway Special Fund and funds from the City and County of Honolulu that are available for transit and roadway projects. Based on historical and current trends in transportation project financing and in the State Highway Special Fund revenue collection, additional revenues are assumed to become available in future years for the TOP 2025 transportation projects. The following sections describe the federal, state and city funding sources and the assumptions applied to develop projections of the revenues from these funding sources that are currently in place.

2.8.1 Existing Federal Highway Revenues

The Transportation Equity Act for the 21st Century (TEA-21) has authorized federal funds to states for the maintenance and construction of highways, interstates and public roads. The Federal Highway Administration (FHWA) distributes the federal funds programmed by TEA-21 to the states. The FHWA funds for highway projects are provided to the states through the following programs:

- Interstate Maintenance (IM). Provides funding for resurfacing, restoring, rehabilitating and reconstructing most routes on the interstate system. IM funding is apportioned on the basis of total lane miles on the interstate system, vehicle miles traveled (VMT) on the interstate system and contributions to the Highway Account attributable to commercial vehicles.
- National Highway System (NHS). Provides funding for improvements to rural and urban roads that are part of the NHS, including the interstate system and designated connections to major intermodal terminals. Under certain circumstances, NHS funds may also be used to fund transit improvements in NHS corridors. NHS funding is apportioned on the basis of lane miles of principal arterials, VMT on principal arterials, diesel fuel used on highways and population.
- Bridge Replacement and Rehabilitation (BRR). Provides funds to assist the states in their programs to replace or rehabilitate deficient highway bridges and to seismic retrofit bridges located on any public road. BRR funding is apportioned based on the state's relative share of the total cost to repair or replace deficient bridges.
- Surface Transportation Program (STP). Provides flexible funding that may be used by states and localities for projects on any federal-aid highway, including

NHS, bridge projects on any public road, transit capital projects and intracity and intercity bus terminals and facilities. STP funding is apportioned on the basis of lane miles of federal-aid highways, VMT on lanes of federal-aid highways and tax payments attributable to highway users in the state. Portions of the STP funds are set aside for enhancement and safety projects.

- Congestion Mitigation and Air Quality (CMAQ). Funds projects and programs that reduce transportation related emissions. CMAQ funds are distributed based on population and the severity of pollution. Since Hawaii is not an area with air quality issues, the severity of pollution is not a factor in the CMAQ funds distributed to Hawaii.
- Minimum Guarantee. Provides funding to states based on equity considerations, including specific shares of overall program funds and a minimum return on contributions to the Highway Account of the Highway Trust Fund. During TEA-21, no state may receive less than \$1 million per year in Minimum Guarantee funds.
- Recreational Trails Program. Provides funds to develop and maintain recreational trails for motorized and non-motorized recreational trail users. The funds are apportioned to the states according to the states that have trails and in proportion to the amount of off-road recreational fuel use.
- High Priority Projects. Provides designated funding for specific projects identified by Congress.

2.8.2 Federal Highway Revenue Assumptions and Projections

The Federal Highway Administration (FHWA) funds are apportioned through legislation. Currently, TEA-21 authorizes funding levels through 2003. After 2003, no definite assumptions can be made about the continuing levels of federal funding or Hawaii's share of the federal program. The development of the next generation of transportation legislation will begin shortly during 2002. Given these unknowns, the only basis to project revenues is historical trends with the understanding that future outcomes may differ materially from historical trends.

Initially, alternative levels of federal funding were tested to determine a reasonable growth rate for FHWA funding. The analysis began with identifying the continuing programs in ISTEA and TEA-21 and determined the growth rates for these programs. The continuing FHWA programs are those based on apportionment formulas, such as IM, NHS, BRR, STP, CMAQ, Innovative Projects/ Recreational Trails, Minimum Guarantee and High Priority.

The financial analysis examined several scenarios to determine trends in the continuing program growth from ISTEA to TEA-21. First the analysis looked at the level of

authorization during ISTEA Only (1992-1997) and TEA-21 Only (1998-2003), and then determined the authorization level from ISTEA through TEA-21 (1992-2003). The last scenario analyzed the authorization level during the last three years of TEA-21 (2001-2003). Table 2-12 presents the different authorization levels for federal funding between ISTEA and TEA-21.

Table 2-12
Historical FHWA Program Annual Rate of Growth
in Authorization Levels for Hawaii

	ISTEA Only (1992-97)	TEA-21 Only (1998-2003)	ISTEA and TEA-21 (1992-2003)	Last 3 Years of TEA-21 (2001-03)
Year of Expenditure (YOE) Dollars	4.05%	4.60%	3.67%	1.85%
Year 2000 Dollars*	0.86%	1.96%	0.61%	-0.94%

* Adjusted for inflation.

Note: Based on dollars appropriated for 1992-2000 and dollars authorized for 2001-2003.

The growth rate shown by the “TEA-21 Only” scenario from 1998 to 2003 was recommended by the TOP 2025 financial consultant and was selected by the OMPO Policy Committee as a reasonable and recent trend for the FHWA funding experienced by Hawaii. Although other scenarios analyzed show a slower rate of growth for Hawaii’s FHWA funds, the growth experienced throughout TEA-21 continues the growth that occurred during ISTEA. It was recommended that the financial analysis for the TOP 2025 use this growth rate because the legislative trend since ISTEA has been to increase the levels of FHWA funding. While the current TEA-21 funding levels may be used as a guide, uncertainties remain with regard to economic growth and the overall federal budget. However, this historical trend is a reasonable assumption to use for projecting future FHWA funds that will be available to Hawaii.

2.8.3 FHWA Funding Levels for Oahu

The Federal Highway Administration funds are apportioned to the State of Hawaii, and the state distributes the money to the counties. Historically, Oahu has received between 60 percent and 70 percent of the state’s FHWA apportionment. However, in recent years the increasing development on neighboring islands and the completion of H-3 have reduced the highway funds expected for Oahu to levels lower than 60 percent.

The Highways Division of HDOT provided guidelines for the estimating the percentage of FHWA funds available by county for the TOP 2025 planning process. The guidelines are for long-term financial planning purposes only and reflect reasonable revenue assumptions for Oahu and the rest of the islands over a 25-year period. Annual revenues

to the counties may fluctuate, especially in years where high-cost projects are programmed.

The Highways Division of HDOT estimates that an average of 53.26 percent of all the FHWA funds, exclusive of the Statewide Highway Program, will be available for Oahu from 2000 to 2025. HDOT distributes FHWA funds directly to each county, but a small portion of the FHWA funds also are reserved to fund a Statewide Highway Program, which provides additional funding to projects important to the State and the state's highway system goals. The percentage of each FHWA program's funds, including the Statewide Highway Program, received by Oahu varies. Table 2-13 presents Oahu's percentage of FHWA funds by program as estimated by HDOT for the 25-year period.

Table 2-13
Application of FHWA Funds to Oahu for 2000 to 2025

Fund Program	Oahu Percentage
Interstate Maintenance (IM)	100.00%
National Highway System (NHS)	52.17%
Bridge Replacement and Rehabilitation (BRR)	75.00%
Surface Transportation Program (STP) / Congestion Management and Air Quality (CMAQ) / Minimum Guarantee	47.48%
High Priority	53.26%
Innovative Projects / Recreational Trails	53.26%

Table 2-14 presents the estimated federal revenues by program for Oahu between 2000 and 2025 in year 2000 dollars. Oahu's share of the FHWA funds was projected by assuming that the program growth of TEA-21 will continue throughout the TOP 2025 analysis period and by applying the Oahu percentages presented in Table 2-13. The category shown as "Flexible Funding Available for Transit" reflects the fact that STP and NHS highway funds are available for transit projects. Funds from the STP category may be used for transit capital projects and bus terminals and facilities. NHS funds are only available for transit improvements in NHS corridors.

Table 2-14
Federal Funds Available for Highway Projects
(in millions of year 2000 \$)

FHWA Fund Program	Statewide TEA-21 2001	Statewide TEA-21 2002	Statewide TEA-21 2003	Annual % Growth for 2004-2025	% to Oahu	Oahu Total 2001-2025
Interstate Maintenance	\$ 8.93	\$ 7.72	\$ 7.69	1.96%	100.00%	\$ 237.41
National Highway System	\$46.24	\$41.09	\$40.99	1.96%	52.17%	\$ 659.74
Bridge Replacement and Rehabilitation	\$24.77	\$21.15	\$21.06	1.96%	75.00%	\$ 487.95
Surface Transportation Program	\$35.58	\$31.47	\$31.31	1.96%	47.48%	\$ 458.78
Congestion Management and Air Quality	\$ 8.68	\$ 7.68	\$ 7.64	1.96%	47.48%	\$ 111.92
Innovative Projects / Recreational Trails	\$ 0.52	\$ 0.53	\$ 0.52	1.96%	53.26%	\$ 8.49
Minimum Guarantee (Limitation)	\$ 0.80	\$ 0.80	\$ 0.78	1.96%	47.48%	\$ 11.45
Minimum Guarantee (Spec Limit)	\$ 9.93	\$ 9.89	\$ 9.63	1.96%	47.48%	\$ 140.68
Minimum Guarantee (Exempt)	\$ 3.17	\$ 3.20	\$ 3.12	1.96%	47.48%	\$ 45.53
High Priority	\$ 9.76	\$ 9.15	\$ 8.91	1.96%	53.26%	\$ 146.40
Flexible Funding Available for Transit						(\$ 140.00)
Total for Highway Projects						\$2,168.34

2.8.4 Existing Highway State Revenues

2.8.4.1 State Highway Special Fund Description

The State Highway Special Fund's primary funding sources include:

- Liquid fuels tax
- Vehicle registration fee
- State motor vehicle weight tax
- Car rental/tour vehicle surcharge
- Overweight vehicle surcharge

The State Highway Special Fund provides funding for the following:

- Roadway construction for projects that are 100 percent funded with State funds
- Local match for federally funded projects
- Debt service on bonds sold to finance construction projects
- Rehabilitation of facilities (special maintenance)
- Maintenance
- Personnel
- Other small categories

The HDOT Highways Division leverages a portion of the State Highway Special Fund revenues by issuing debt to fund the required local match for FHWA funds (i.e., selling bonds).

2.8.4.2 *State Highway Funding Assumptions and Projections*

For the purpose of this analysis, the assumption was made that the State will provide local match for the federal funds anticipated for Oahu. Table 2-15 calculates the local match required for the FHWA program funds throughout the TOP 2025 analysis period to be \$509.1 million.

Table 2-15
Estimated State Match for Oahu
(in millions of year 2000 \$)

Fund Program	Federal		State	
	Dollars	% Share	Dollars	% Share
Interstate Maintenance	\$ 237.41	90%	\$ 26.38	10%
National Highway System	\$ 659.74	80%	\$164.93	20%
Bridge Replacement & Rehabilitation	\$ 487.95	80%	\$121.99	20%
STP	\$ 458.78	80%	\$114.69	20%
CMAQ	\$ 111.92	80%	\$ 27.98	20%
Innovative Projects/Recreational Trails	\$ 8.49	80%	\$ 2.12	20%
Minimum Guarantee (Limitation)	\$ 11.45	80%	\$ 2.86	20%
Minimum Guarantee (Spec Limit)	\$ 140.68	80%	\$ 35.17	20%
Minimum Guarantee (Exempt)	\$ 45.53	80%	\$ 1.38	20%
High Priority	\$ 146.40	80%	\$ 36.60	20%
Flexible Funding Available for Transit	(\$ 140.00)	80%	(\$ 35.00)	20%
Total	\$ 2,168.34		\$509.10	

In addition to providing the State match for FHWA funds, the State Highway Special Fund provides funding for the rehabilitation of facilities (also known as special maintenance or system preservation). The Highways Division of HDOT provided historical and projected state special maintenance funding for Oahu. For the purpose of the TOP 2025 analysis, the assumption was made that Oahu will receive \$16.9 million annually in special maintenance funding throughout the 25-year planning period of the TOP 2025. Therefore, the special maintenance funds received by Oahu between 2001 and 2025 totals \$423 million.

2.8.5 Transit Sources of Funds

The City and County of Honolulu conducted extensive analyses of transit revenue sources that could be available over the next 25 years as part of the MIS/DEIS for the proposed Bus Rapid Transit (BRT) project. The projections for federal, state and local revenues available for transit funding are based on this previous work, as documented in Financial Analysis Chapter of the *Major Investment Study / Draft Environmental Impact Statement, Primary Corridor Transportation Project (August 2000)*.

2.8.5.1 Existing Federal Transit Funding

TEA-21 authorized federal funds for transit projects from the Mass Transit Account of the Highway Trust Fund. The federal funds for transit projects are administered by the Federal Transit Administration (FTA). FTA funds available for transit projects are:

- Section 5307 Urbanized Area Formula Grants (FTA Formula Funds). These formula grants are based on various demographic, levels of service and ridership variables. For Honolulu, TEA-21 limits the application of these grants to capital and planning purposes, but maintenance expenses are considered as “capital” under this funding program. One percent of these grants must be applied for “enhancements,” which includes the new initiative capital projects, such as the BRT.
- Section 5309 Fixed Guideway Modernization Grants. These formula grant funds are apportioned based on the bus service operated on fixed guideways (i.e., the Hotel Street bus mall, and the high occupancy vehicle and express lanes). These funds can be used for, among other items, purchasing rolling stock and for preventive maintenance.
- Section 5309 New Starts Grants. These discretionary grants are authorized and appropriated by Congress to fund “new start” rail and BRT projects. Congress considers reports provided by FTA on the performance of candidate projects compared to established criteria during this “earmarking” process. While the statutory maximum federal participation for Section 5309 New Starts funds is 80

percent, the actual level of FTA participation in New Starts in recent projects has been considerably less.

In addition to FTA funds, FHWA funds from the STP and NHS programs can be made available for transit projects. STP may be used for transit capital projects and bus terminals and facilities. NHS funds are only available for transit improvements in NHS corridors.

Table 2-16 summarizes the FTA and FHWA funds available for the TOP 2025 transit projects, as projected in the *Major Investment Study / Draft Environmental Impact Statement, Primary Corridor Transportation Project (August 2000)*, referred to as the MIS/DEIS for BRT. Although the MIS/DEIS for BRT presents the funding in year of expenditure dollars, the funding estimates have been converted to 2000 dollars for the purpose of this analysis.

Table 2-16
Federal Funding Available to Transit
(millions of year 2000 \$)

Funding Program	Total Funding 2001-2025
Section 5307 FTA Formula Funds	\$301
Section 5309 FTA Fixed Guideway Modernization Funds	\$ 17
FTA New Starts Discretionary Funds	\$161
FHWA Formula Flexible Funding	\$140
Total Federal Funding for Transit	\$619

2.8.5.2 State and City Funding Available for Transit

In addition to the federal funding, local bond revenues and revenues from the City Highway Fund will be dedicated to the BRT transit projects during the analysis period for the TOP 2025. The projection of the local funding used for the TOP 2025 transit projects in year of expenditure dollars is taken directly from the MIS/DEIS for the BRT and has been converted to year 2000 dollars. Table 2-17 presents a summary of the local transit funding available for the TOP 2025.

Table 2-17
State and City Transit Funding
(millions of year 2000 \$)

Funding Program	Total 2001-2025
State Match for FHWA Funds	\$ 35
City General Obligation Bonds	\$228
City Highway Fund	\$207
Total State & Local	\$470

2.8.6 Additional Funding Sources

Additional funding sources also were analyzed after funding needs had been evaluated based on the potential projects under consideration for the TOP 2025. Although the results of these analyses are presented in Chapter 6, the analyses concluded that an additional \$500 million could likely be made available through additional tax revenue sources (tax revenue growth) and \$141 million from developer sources over the period from 2001 through 2025.

2.8.7 Summary of Funding Outlook

Table 2-18 summarizes the funding outlook for the TOP 2025.

Table 2-18
Summary of Funding Outlook

Funding Source	Anticipated Amount
FHWA funding for system preservation and highway projects	\$ 2,168 million
State/City match for FHWA highway funds	\$ 509 million
State Maintenance Funds	\$ 423 million
Federal revenues for transit projects from FTA and FHWA	\$ 619 million
State and City funding for transit	\$ 470 million
Tax Revenue Growth	\$ 500 million
Developer Contributions	\$ 141 million
Total Revenues from Existing Sources	\$ 4,830 million

3.0 Project Identification, Screening and Evaluation

3.1 Project Identification

3.1.1 Identifying Baseline Projects

One of the initial steps in analyzing potential projects for inclusion in the TOP 2025 was the identification of projects that are "committed" and therefore have a high probability of being implemented. These committed projects were added to the computerized network that describes the current (year 2000) highway and transit network. This network of facilities is the Baseline 2025 network. Projects formally programmed through the Transportation Improvement Program (TIP) were considered committed and were therefore labeled Baseline Projects. The 2000-2002 TIP was reviewed to identify these Baseline Projects.

Based on the results of this review of the TIP, the OMPO Policy Committee approved eight projects as Baseline Projects. These projects are expected to be constructed within the next few years and have been assumed to be completed prior to 2025 in the evaluations of 2025 conditions. The Baseline Projects are listed in Table 3-1.

**Table 3-1
Baseline Projects for TOP 2025**

Facility	Project Limits	Description
Interstate Route H-1	Middle Street to Vineyard Boulevard	Add one eastbound lane
Interstate Route H-1	Eastbound off-ramp to Punahou Street	Widen (add one lane)
Interstate Route H-1	Waimalu Viaduct to Pearl City off-ramp	Add one westbound lane
Puuloa Road	Salt Lake Boulevard to Nimitz Highway	Widen, two to four lanes
Salt Lake Boulevard	Lawehana Street to Ala Lilikoi Street	Widen, two to four lanes
Leeward Bikeway	Waipio Point Access Road to Lualualei	Construct bike path improvements
Pearl Harbor Bike Path Gateways	Route FR 1 Gateway at Lehua Avenue Route FR 1 Gateway at Blaisdell Park Route FR 1 Gateway at Kanuku Street Route FR 1 Gateway at Pearl Kai Center Route FR 1 Gateway at McGrew Point	Construct bike path improvements
College Access Bikeways	Route 13 Dole Street (University Avenue–East West Road) Route 15 University Avenue–Dole Street Intersection Route 16 University Avenue (Varsity Place–Dole Street [Mauka direction only]) Route 17 University Avenue (Dole Street–Maile Way) Route 18 University Upper Fire Road (East West Road–Pamoa Road)	Construct bike lane improvements

A 2025 Baseline transit network was defined to represent planned improvements defined in the leeward Hub and Spoke Bus Route Project and an increase in bus service frequencies aimed at accommodating future growth in population and employment.

Capital cost estimates for the Baseline Projects were provided by the proposing agencies. The construction of several of these projects already has been funded utilizing funds from the Transportation Improvement Program (TIP) for fiscal year (FY) 2000 or earlier. The remaining Baseline Projects require funding in the FY 2001 or later years of the TIP and thus, \$130.6 million must be provided for in the TOP 2025 financial planning to pay for the Baseline Projects.

3.1.2 Identifying Projects for Consideration in the TOP 2025

In addition to the Baseline Projects described above, candidate projects for the TOP 2025 were developed from various sources. A total of 153 projects were identified as candidate projects using recommendations from the technical staffs of several involved agencies (including projects from the 2020 ORTP), public comments and a technical analysis of future travel demand with the 2025 Baseline condition. Each of these three efforts to identify projects is described below.

3.1.2.1 Agency Recommendations

The State of Hawaii Department of Transportation and the City and County of Honolulu Department of Transportation Services were canvassed for their recommended list of projects to be considered by the TOP 2025 process. Highway improvement projects were identified by the State. The City identified several roadway projects and the various components of the proposed BRT project. The BRT project was selected by City Council as the Locally Preferred Alternative (LPA) and, thus, is anticipated to proceed directly toward implementation.

This canvassing of the State and City transportation agencies also included a review of the status of projects included in the 2020 ORTP that was adopted in 1995. Projects that have not been completed were identified and reviewed. Many of these projects were modified due to changes that may have occurred since the 2020 ORTP was adopted. 68 projects were identified through this process.

3.1.2.2 Public Recommendations

Sixty projects were identified from public comments, by elected officials or in the draft *Ewa Regional Transportation Master Plan*. Public comments received from the following sources also provided potential projects:

- The City's Trans-2K process during 1998 and 1999 (included in projects submitted by City as described in Section 3.1.2.1).
- Other public meetings.
- Neighborhood boards.
- Various private and public organizations.
- Letters, telephone calls and other sources received by OMPO between the approval of the 2020 ORTP in 1995 and this update for the TOP 2025.

3.1.2.3 Technical Analysis

Peak period traffic assignments for the future 2025 Baseline condition (existing system plus Baseline Projects) were made using the travel demand model for Oahu. Volume-to-capacity ratios were plotted, and major roadways on which volumes were projected to exceed capacity were identified. In many cases, the agency recommendations and/or public recommendations addressed these projected transportation system deficiencies. However, in some instances, additional improvements would be necessary to provide adequate capacity to serve the forecasted traffic demands. 25 roadway projects were added as a result of this analysis.

A project description was developed for each identified project (in many instances, this project description consisted of a refined definition based on previous planning efforts), and the entire list of potential projects was reviewed. Similar and related projects were combined into a single project. As a result, the initial list of 153 projects was consolidated into a list of 101 projects. This list of projects and the associated project descriptions were presented to the public in a series of Regional Meetings in November 2000. The QuickPick Forms used in these meetings to solicit and organize public input on these projects can be found in the report, *Public Input Summary Report for Six Level 1 Findings Regional Meetings*.

As a result of the public meetings and further evaluation by the agencies, one project was divided into two, four projects were combined into one and two additional projects were added. After these revisions, the list ended up with the same number, and these 101 projects were considered in the screening and detailed project evaluation.

3.2 Evaluation Process

The project screening and evaluation included technical analyses, a review of public comments and an analysis of funding. The technical analyses included the development of capital cost estimates for the projects, estimates of project performance and evaluations of the projects. Public input for each project, as well as for other possible transportation improvements, was tabulated. Estimates were made of the projected revenues that would be available over the 25-year term of the plan being developed.

The evaluation process consisted of two steps, as follows:

- A Level 1 screening process utilized a set of criteria related to the established project goals and objectives and focused on the planning status of each project. Projects that passed the Level 1 screening were evaluated in more detail at Level 2.
- In this Level 2 evaluation, projects were classified into several categories reflecting the primary purpose of the proposed project. Appropriate evaluation measures (measures of effectiveness) were used to evaluate projects within each category.

The results of both the Level 1 screening and Level 2 evaluation were presented to the Policy Committee along with the 25-year financial projections. The Level 2 process resulted in a financially constrained list of projects that was recommended for the 25-year plan.

3.3 Level 1 Screening

An initial, or Level 1, screening process was used to reduce the number of projects. The initial screening of the projects was based on the planning status of each project and included several steps, as follows:

- Projects that were in the 2020 ORTP, the status of which generally remained unchanged, automatically passed the Level 1 screening and were forwarded to Level 2 for further analysis and evaluation. If answers to the following questions were "yes," the project's status was judged generally unchanged since its inclusion in the 2020 ORTP.
 1. Was the currently proposed project largely unchanged from the 2020 ORTP project?
 2. Was this project relatively unaffected by other proposed projects?
 3. Was there no significant public or agency opposition to this project?
- For projects where the answer to any of the above three questions was "no" or the project was not in the 2020 ORTP, a set of 22 criteria was used to evaluate these projects. These criteria were based on the goals and objectives of the regional transportation plan and are listed in Table 3-2.

The public input from the regional and stakeholder group meetings was assessed in draft form and used as input for the Level 1 screening. Input received on several projects was used to check the accuracy of project descriptions and/or to develop a potential modified project. The public involvement results were used to augment the process and to provide additional information to the Policy Committee.

Substantial public input was received from various sources, including from the QuickPick Forms, from meetings, by mail and downloaded from the OMPO Web site.

Neighborhood Board comments and letters from individuals and organizations were received. The data and comments were reviewed, tabulated, sorted, and summarized in the report, *Public Input Summary Report for Six Level 1 Findings Regional Meetings*. Throughout the project, the OMPO CAC was kept up to date with periodic presentations on the development of the TOP 2025 as well as the implementation of the PIP.

All 101 projects were evaluated using this Level 1 screening process. As a result of this screening, the Policy Committee removed 11 projects from further consideration in the TOP 2025 and added one new project. Ninety-one projects were carried forward into the Level 2 Detailed Project Evaluation Process.

The Level 1 screening criteria, methodology and results are detailed in Appendix B.

Table 3-2
Level 1 Project Screening Criteria

Screening Criteria Applied to Projects with Changed Status Since the 2020 ORTP or Projects not Included in the 2020 ORTP	
1.	Volume-to-capacity ratio across screenline(s) served by project
2.	Percentage increase in person carrying capacity across congested screenlines
3.	Amount of potential reduction in travel delay
4.	Number of users served
5.	Initial capital cost
6.	Meet needs not served by other projects
7.	Provide improved access to an airport
8.	Provide improved ground access to harbor
9.	Improve freight operations or reduce freight costs
10.	Environmental Justice rating
11.	Does project address identified safety problems?
12.	Does project include ITS elements?
13.	Does project include TSM elements?
14.	Does project include or accommodate non-vehicular modes?
15.	Number of new transit riders
16.	Can project be implemented with few impacts to existing neighborhoods?
17.	Degree of public support for project
18.	Does facility provide alternative route to areas with few access routes?
19.	Does project serve existing developed areas?
20.	Does project support desired development patterns?
21.	Does project support reduction in vehicular travel?
22.	Is project regionally significant?

3.4 Level 2 Project Evaluation

Projects remaining under consideration for the TOP 2025 were divided into the six categories that address specific goals and objectives of the overall plan:

- A. Congestion Relief Projects
- B. Transit and Alternative Modes Projects
- C. Operations and Safety Projects
- D. Second Access Projects
- E. Projects that Support Community Planning Goals
- F. Projects that Provide Local Circulation and/or Community Access

Within each of these six categories, technical evaluation measures were used to judge the effectiveness of the potential projects to meet goals and objectives of the TOP 2025. A rating was applied to each evaluation measure. These ratings were used along with the input received from the public and other information to help establish priorities. (Summaries of the evaluation are provided in Appendix C.)

3.4.1 Congestion Relief Projects

The Congestion Relief Projects proposed for inclusion in the TOP 2025 were analyzed using the travel demand process. These projects were packaged into four groups of projects, coded as additions to the 2025 baseline network, and modeled for the forecast year of 2025. This modeling effort, in combination with additional data analysis and display, produced information on the performance of each group of projects at the regional level as well as across traffic screenlines. This modeling data included changes in travel times, volume-to-capacity ratios and traffic and transit assignments. These data were used to calculate the measures of effectiveness described below.

28 projects were placed in the Congestion Relief category. Two projects within the same geographic limits were combined into a single project, and three other related projects were combined into another, resulting in a list of 25 projects that were evaluated for transportation effectiveness and cost effectiveness. This process was best suited for road widening projects, for which travel time changes can be represented most effectively with the travel forecasting model. The measures of effectiveness for the congestion relief projects were:

- Severity of congestion on affected facility.
- Travel time savings per mile traveled.
- Daily vehicle hours of travel saved in the peak direction of travel during morning and evening peak hours (the a.m. peak period is from 5:00 to 9:00 and the p.m. peak period is from 2:00 to 6:00).

- Affordability (high capital cost = low rating).
- Cost per vehicle hour saved in the peak direction of travel.

The projects were each rated “very low,” “low,” “medium,” “high” or “very high” based on numerical values of the measures of effectiveness. (See Appendix C for additional information on this evaluation process.)

3.4.2 Transit and Alternative Modes Projects

Eight projects were placed in the Transit and Alternative Modes category. These projects were divided into two sub-categories for analysis purposes. The first sub-category consists of projects where the benefits are non-quantifiable. These projects (bicycle, vanpool and travel demand management projects) were compared to applicable TOP 2025 goals and objectives from Table 1-1, as follows:

- Objective #15. Develop and maintain low energy transportation facilities, including bikeways, walkways and other energy efficient elements that can be safely integrated with other transportation modes.
- Objective #16. Encourage energy conservation in transportation.
- Objective #25. Encourage increases in system-wide ride sharing on Oahu.
- Objective #26. Maximize the efficient use of the transportation system.
- Objective #27. Encourage programs that reduce use in single occupant vehicle travel and vehicle miles traveled.

Projects in the second sub-category (including BRT and ferry proposals) were capable of being analyzed and compared to measures of effectiveness for transit projects, as follows:

- Severity of congestion on affected facility.
- Travel time savings per mile traveled.
- Number of users attracted by project.
- Affordability (high capital cost = low rating).
- Cost effectiveness (transit projects) = capital cost per new rider.

The Transit and Alternative Modes projects were, as appropriate, rated “very low,” “low,” “medium,” “high” or “very high” based on the measures of effectiveness. (See Appendix C for additional information on this evaluation process.)

3.4.3 Operations and Safety Projects

23 projects were placed in the Operations and Safety category. Two related projects were combined into one project and four similar projects were combined into one project,

resulting in a total of 19 projects in the category (see Appendix C). Measures of effectiveness for Operations and Safety projects included:

- Number of vehicle trips using affected segments.
- Affordability (high capital cost = low rating).
- Annualized cost per vehicle trip in 2025.

The Operations and Safety projects were each rated “very low,” “low,” “medium,” “high” or “very high” based on numerical values of the measures of effectiveness. (See Appendix C for additional information on this evaluation process.)

3.4.4 Second Access Projects

Four projects were placed in the Second Access category. These projects were rated using the following criteria:

- Availability of existing alternative routes.
- Existing traffic volume per day at link prone to disruption.
- Affordability (high capital cost = low rating).
- Capital cost divided by daily volume.

The Second Access projects were each rated “very low,” “low,” “medium,” “high” or “very high” based on the information developed for each criterion. (See Appendix C for additional information on this evaluation process.)

3.4.5 Projects that Support Community Planning Goals

19 projects were placed in the Support Community Planning Goals category. These projects have been proposed to achieve various goals and were evaluated using the following measures of effectiveness:

- Improvements for access to development areas.
- Improvements to quality of life.
- Improvements that enhance goods movements.

The Support Community Planning Goals projects were each rated “very low,” “low,” “medium,” “high” or “very high” based on qualitative assessment of each measure of effectiveness. (See Appendix C for additional information on this evaluation process.)

3.4.6 Projects that Provide Local Circulation and/or Community Access

Nine projects were placed in the category of Projects that Provide Local Circulation and/or Community Access. These projects include improvements to access to communities or facilities and improvements that modify traffic operations.

For projects that improve access to communities or facilities (new roads, new interchanges and improvements to existing roads), measures of effectiveness were:

- Change in travel time to nearest freeway interchange or intersection with major highway from areas served by project.
- Number of daily vehicle trips using the project.
- Affordability (high capital cost = low rating).
- Annualized cost per vehicle trip.

For projects that modify traffic operations, measures of effectiveness were:

- Traffic volume using the facility.
- Affordability (high capital cost = low rating).

The projects were each rated “very low,” “low,” “medium,” “high” or “very high” based on the measures of effectiveness. (See Appendix C for additional information on this evaluation process.)

3.4.7 Summary of Level 2 Project Evaluation

In addition to the technical analysis, the Level 2 evaluation incorporated results from the public involvement process. Further analysis of the data from the six Regional Meetings held in November was included in the Level 2 evaluations. Three additional special needs focus groups and one islandwide random focus group were conducted. An islandwide telephone survey was conducted during the week of January 15, 2001. A random sample of 501 people was polled to gather general information about transportation policies and projects.

The public input for each project was summarized and incorporated into a matrix format that included the “thumbs-up/thumbs-down” votes, priority votes and number of positive and negative comments from the QuickPick Forms. The matrix also included results from the telephone survey, relevant focus group comments and endorsements or comments by neighborhood boards and other organizations.

The results of the Level 2 evaluation were provided to the Policy Committee for their consideration as they compared the proposed projects to anticipated funding over the next

25 years. The measures of effectiveness, evaluation methodology and results of the Level 2 evaluation are detailed in Appendix C.

3.5 Building the TOP 2025 Plan

The results of the Level 2 evaluation were considered by the Policy Committee as they compared proposed projects to estimates of available funding over the 25-year planning period of TOP 2025. The Policy Committee dropped projects from the Level 2 list of projects to develop a financially constrained TOP 2025. Some of the projects that were removed from the fiscally constrained TOP 2025 were recommended by the Policy Committee as projects that should be considered as high priorities for additions to the regional transportation plan if additional funding sources were identified. The final list of TOP 2025 projects is described in Chapter 4.

4.0 The Transportation for Oahu Plan (TOP) 2025

This chapter describes the projects and programs selected by the OMPO Policy Committee as the TOP 2025. As described in Chapter 3, the candidate projects were grouped into six categories based on the project intent. The intent responds directly to project goals and objectives and serves as a useful means for organizing the projects for discussion. These six categories are used in the following paragraphs to describe the projects selected for the TOP 2025. The OMPO Policy Committee also included consideration of system preservation needs in their deliberations.

Many projects address goals and objectives that overlap the categories that were used for the TOP 2025 evaluation. For example, a project that relieves congestion will often improve safety and operations. Similarly, a project that provides improved transit service and offers an alternative mode to the traveling public will often divert trips from autos to transit, thus relieving traffic congestion. This discussion recognizes the overlap of project intent but focuses on the primary purpose of each project.

At the same time, while a primary purpose of a project may be to relieve automotive congestion or improve automotive safety and operations of existing streets, any and all improvements funded in the TOP 2025 will be constructed so that transportation efficiency and safety is improved for all roadway users, including motorists, bicyclists, pedestrians and transit riders. These projects include, but are not limited to placement of guard rails, curbing, signage, lane or road widenings and street realignments.

4.1 Congestion Relief Projects

Congestion Relief projects were conceived primarily to increase the vehicle-carrying capacity of Oahu streets and highways. They are proposed for facilities and areas with existing levels of severe congestion and locations where travel demand projections show that congestion will worsen over the next 25 years. Adding lanes to freeways and arterials or making improvements to major interchanges are typical of this category of projects.

4.2 Transit and Alternative Mode Projects

A number of projects were proposed to provide alternative modes of transportation to the single-occupant automobile and to use the street and highway infrastructure more efficiently. Bus Rapid Transit (BRT), expanded bus service, paratransit service, vanpool programs, ferry service, bike paths and routes and pedestrian facilities are in this category. Managing travel demand includes many of these alternative modes but also includes strategies to change work behavior (telecommuting, variable work hours and four-day workweeks, among others).

4.3 Operations and Safety Projects

Many of the projects were proposed to improve the safety and operations of existing streets and freeways. Intersection improvements, the addition of continuous left turn lanes, street realignments, street or highway widenings, Intelligent Transportation Systems, interchange modifications, freeway ramp and transition lane modifications and general safety improvements fall in this category.

4.4 Second Access Projects

Portions of Oahu have limited access to the remainder of the island. Oftentimes, a single facility connects numerous homes and businesses to the larger community. A hostage incident, a major traffic accident, high water or a landslide have and continue to isolate citizens from emergency services, work, school and grocery shopping. In some instances, projects to connect minor "back" roads can provide a second way into and out of an area at a relatively low cost. In other instances, a major new facility would be required to cross one of Oahu's mountain ranges. These projects were not generally perceived as having large traffic carrying capacity, being capable of moving traffic at high speeds, or generally being used on a daily basis. Rather, these projects would provide second access to an area when the primary access is out of service.

4.5 Projects in Support of Community Planning Goals

Several types of projects were considered to support a diverse set of community planning goals. This diversity of goals is entirely appropriate given the varied nature of the communities on Oahu, such as new residential and commercial areas, expanding industrial facilities, growing retail areas, and existing developed areas.

Community planning efforts for the Ewa area have identified the need for additional street and highway facilities in the high growth Ewa and Kapolei areas. Projects that are most likely to be consistent with the master plan under development for this area were proposed for TOP 2025, and many are included in the final TOP 2025.

Another type of project within this category is the replacement of the bridge crossing the Kalihi Channel to Sand Island with a tunnel to facilitate movement of freighters into and out of Honolulu Harbor with greater efficiency and capacity.

Beautification projects also may relieve traffic congestion or improve safety or operations, but have as their primary goal the support of community planning goals.

4.6 Projects that Provide Local Circulation and/or Community Access

A number of projects were conceived to improve local circulation. In some instances, these projects add new access to an area, such as the Waikiki access from H-1 Ewa-bound or the second access to Leeward Community College. In other instances, the proposed projects close a gap in the street network, such as the Moanalua Road extension, or revise circulation patterns, such as the changes in one-way/two-way operations for Punchbowl and the Piikoi/Pensacola pair. These projects are designed to improve local traffic flow rather than affect regional travel patterns. However, since these projects play an important role in local circulation and access to communities, they merit inclusion in the regional plan.

4.7 Projects Included in the TOP 2025

Table 4-1 lists the projects selected for inclusion in the TOP 2025 as those that should be given the highest priority for implementation within the constraint of projected revenues. The table identifies the general geographic area of the island where the proposed project will be located. Project locations by area are shown in Figure 4-1 through Figure 4-6.

The Policy Committee included Project P-36 (Waikiki access from H-1 Ewa-Bound) in the list of TOP 2025 projects. However, the Policy Committee also specified that this is to be the lowest priority and will require extensive review and study before proceeding.

**Table 4-1
TOP 2025 Projects**

Area	Category**	Project Number	Project Description	Estimated Cost (Millions of Year 2000 \$)
Oahu	Transit/Alt	I-1	Implement State Bicycle Plan	\$ 70.2
Oahu	Transit/Alt	I-2	Implement Van Pool Program	\$ 2.5
Oahu	Ops/Safety	I-3	Intelligent Transportation Systems	\$ 110.0
Oahu	Transit/Alt	I-4	Travel Demand Management	\$ 114.7
CO*	Ops/Safety	C-5	Farrington Hwy. EB vertical realignment near Waipahu Depot Rd.	\$ 20.0
CO	Ops/Safety	C-7	Kamehameha Hwy. widening Ka Uka to Lanikuhana	\$ 97.5
CO	C. Relief	C-10	Kunia Rd. widening H-1 to vicinity of Anonui St.	\$ 25.9
CO	Local Circ	C-15	Waipahu Depot Rd. widening makai of Farrington Hwy.	\$ 3.6
CO	Local Circ	C-16	Waipahu St. eastward extension to Waihona St.	\$ 4.5
CO	Ops/Safety	C-17	Waipahu St. left turn lanes	\$ 9.4
EHon*	C Relief	P-38	Kalanianaʻole Hwy. extend AM contraflow lane to Keahole St.	\$ 1.2
EHon	Ops/Safety	P-47	Kalanianaʻole Hwy. Rockfall Protection at Makapuu	\$ 20.0
Ewa	Ops/Safety	E-1	H-1 Makakilo Interchange new WB on-ramp	\$ 10.9
Ewa	C Relief	E-2	H-1 Kapolei Interchange new interchange	\$ 44.3
Ewa	Comm Plan	E-3	H-1 Palailai Interchange improvements (connects to E-10)	\$ 8.5
Ewa	Comm Plan	E-5	Farrington Hwy. widening Kalaeloa to Kamokila	\$ 4.9
Ewa	Ops/Safety	E-6	Farrington Hwy. widening Kapolei Golf Course to Fort Weaver Rd.	\$ 31.6
Ewa	Comm Plan	E-8	Fort Barrette Rd. widening Farrington Hwy. to F.D. Roosevelt Blvd.	\$ 21.5
Ewa	C Relief	E-9	Fort Weaver Rd. widening Farrington Hwy. to Geiger Rd.	\$ 38.6
Ewa	Comm Plan	E-10	Hanua St. new roadway Malakole St. to Farrington Hwy.	\$ 13.1
Ewa	Comm Plan	E-11	Kalaeloa roadway improvements	\$ 26.9
Ewa	Comm Plan	E-12	Kalaeloa Blvd. corridor improvements	\$ 13.1
Ewa	Comm Plan	E-13	Kapolei Pkwy. completion (Kapolei to Ewa Bch.)	\$ 28.5
Ewa	Comm Plan	E-14	Makakilo Dr. extension (second access)	\$ 8.5
Ewa	Comm Plan	E-15	Mauka Frontage Rd. Makakilo Dr. to Kalaeloa Blvd.	\$ 6.4
Ewa	Comm Plan	E-17	North-South Road Kapolei Parkway to H-1 (includes new interchange with H-1)	\$ 90.0
Koolau. (Windward)	Ops/Safety	K-2	Kahekili Hwy. improvements Haiku Rd. to Kamehameha Hwy. (Note: Improvements will include contraflow in existing right-of-way between Haiku Road and Hui Iwa Street, intersection improvements at Hui Iwa and Kamehameha Highway and other improvements.)	\$ 3.5

(Continued)

Table 4-1 (continued)

Area	Category**	Project Number	Project Description	Estimated Cost (Millions of Year 2000 \$)
Koolau. & NS* (Windward)	Ops/Safety	K-15	Kamehameha Hwy. Safety Improvements (Note: Safety improvements to include turn lanes, guardrails, signage, crosswalks, etc. to improve safety and do not include widening except where needed for storage/turn lanes safety improvements.)	\$ 100.0
NS	2nd Access	N-3	Waimea Bay Access Rd. emergency connectors	\$ 20.0
PUC*	Ops/Safety	P-0 Baseline	Interstate Route H-1, EB off-ramp to Punahou St. (funded before 2001 but included for completeness)	Funding completed
PUC	Transit/Alt	P-1	Honolulu Bicycle Master Plan (Note: \$20 million cost shown for TOP 2025 is a portion of the \$78.7 million for all elements of the Master Plan)	\$ 20.0
PUC	Transit/Alt	P-2a	Regional Bus Rapid Transit	\$ 268.0
PUC	Transit/Alt	P-2b	In-town Bus Rapid Transit and Bus/HandiVans	\$ 821.1
PUC	Transit/Alt	P-3	Express Commuter Ferry	\$ 20.0
PUC	C Relief	P-6 Baseline	H-1 WB Widening Waimalu viaduct to Pearl City off-ramp	\$ 45.0
PUC	C Relief	P-7	H-1 EB widening Waiawa to Halawa	\$ 216.8
PUC	C Relief	P-8	H-1 WB widening Vineyard to Middle	\$ 121.3
PUC	Ops/Safety	P-9	H-1 WB weave modification Lunalilo to Vineyard off-ramp	\$ 21.0
PUC	Ops/Safety	P-10	H-1 EB widening Ward to Punahou, close Piikoi on-ramp	\$ 21.0
PUC	Ops/Safety	P-11	H-1 University Interchange modifications	\$ 20.7
PUC	Ops/Safety	P-12	H-1 WB widen Waipahu off-ramp	\$ 8.4
PUC	Local Circ	P-14	Second access to Leeward Community College	\$ 6.0
PUC	Local Circ	P-22	Moanalua Rd. extension Waimano Home Rd. to Waihona St.	\$ 4.9
PUC	C Relief	P-23	Nimitz Hwy. improvements Keehi to Pacific St.	\$ 192.7
PUC	Local Circ	P-28	Piikoi Pensacola one-way couplet (reverse)	\$ 3.6
PUC	Local Circ	P-29	Punchbowl Street conversion to two-way operation	\$ 2.0
PUC	C Relief	P-32	Fort Armstrong Tunnel	\$ 300.0
PUC	Ops/Safety	P-34	Sand Island Access Rd. widening	\$ 4.4
PUC	Comm Plan	P-35	Sand Island Bridge (replace with tunnel)	\$ 200.0
PUC	Local Circ	P-36***	Waikiki access from H-1 Ewa-Bound	\$ 90.9
PUC	Comm Plan	P-40	Kamehameha Hwy. beautification project (Waiawa to Pearl Harbor)	\$ 30.1

(Continued)

Table 4-1 (continued)

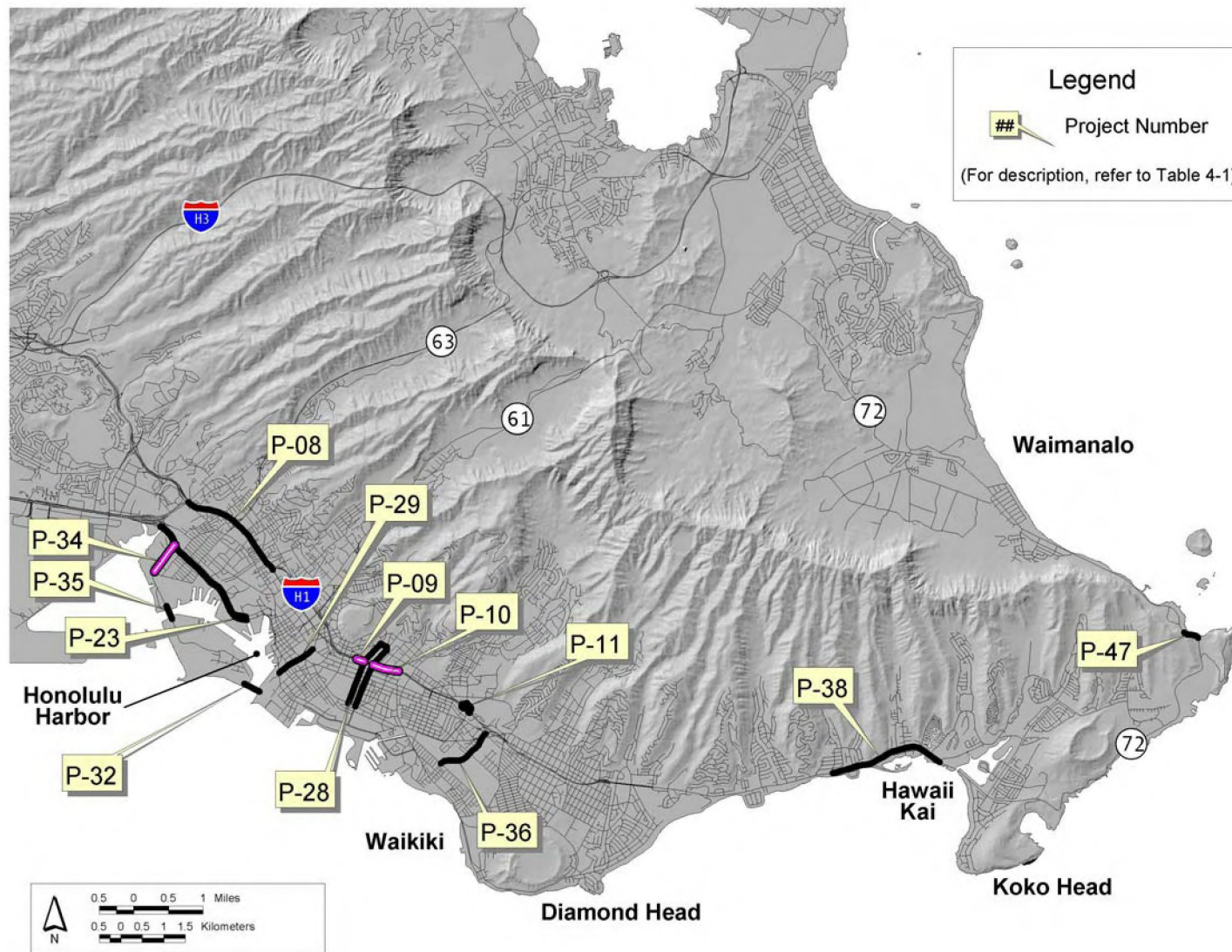
Area	Category**	Project Number	Project Description	Estimated Cost (Millions of Year 2000 \$)
PUC	C Relief	P-41 Baseline	Puuloa Rd. widening - Salt Lake Blvd. to Nimitz Hwy.	\$ 21.6
PUC	C Relief	P-42	H-1 Widening (westbound) through Waiawa Interchange.	\$ 21.3
PUC	C Relief	P-43	H-1 Widening (westbound) Waiau to Waiawa Interchange	\$ 59.5
PUC	C Relief	P-44	Waiawa Interchange Improvements	\$ 21.3
PUC	C Relief	P-45 Baseline	H-1 Eastbound: Widen by one lane from Middle St. to Vineyard Blvd.	\$ 30.0
PUC	C Relief	P-46 Baseline	Salt Lake Blvd. widening: Lawehana St. to Ala Lilikoi (widen from 2 to 4 lanes)	\$ 31.0
Waianae	2 nd Access	W-2	Waianae Emergency Access Road system	\$ 9.3
Waianae	Ops/Safety	W-5	Farrington Hwy. realignment around Makaha Bch. Park	\$ 35.1
Waianae	Transit/Alt	W-7 Baseline	Leeward Bikeway, Waipio Point Access Rd. to Lualualei	\$ 3.0
Waianae	Ops/Safety	W-8	Farrington Hwy. Safety Improvements (Note: Cost estimate reflects intersections improvements only.)	\$ 25.0
			Total for All Projects:	\$ 3,624.8

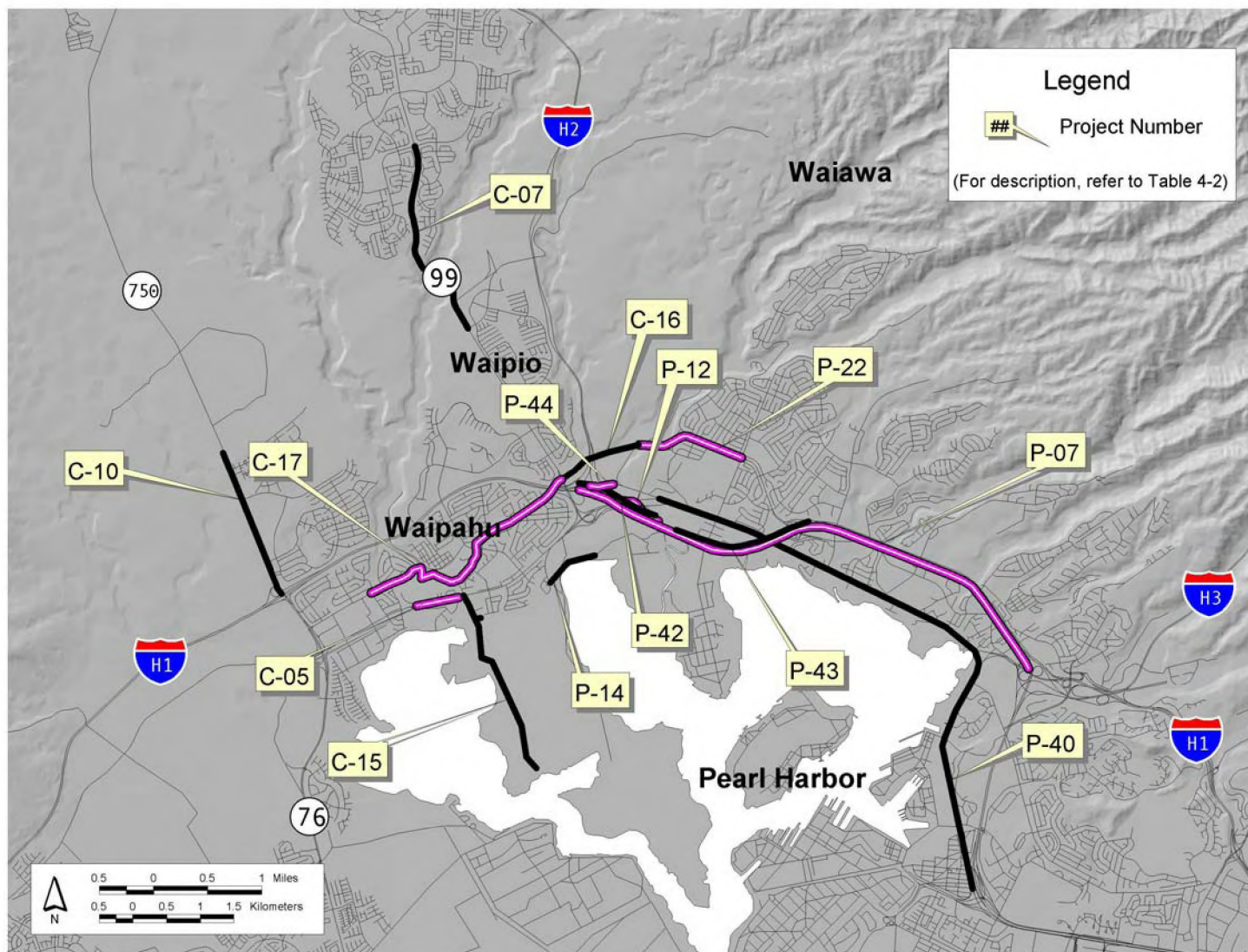
*CO	Central Oahu	NB	Northbound
*PUC	Primary Urban Center	SB	Southbound
*NS	North Shore	EB	Eastbound
*EHon	East Honolulu	WB	Westbound

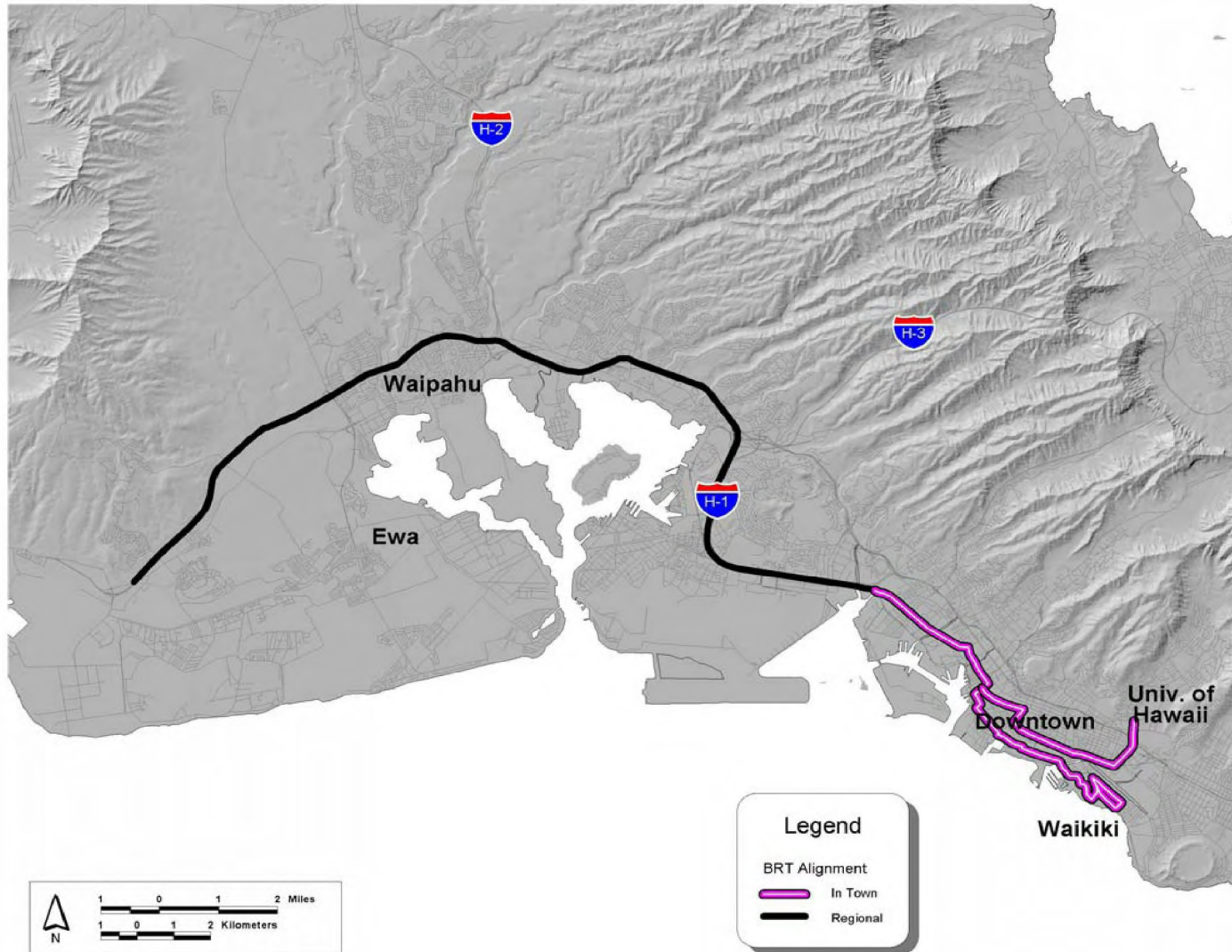
****Categories:**

C Relief	Congestion Relief Projects
Transit/Alt	Transit and Alternative Modes Projects
Ops/Safety	Operations and Safety Projects
2 nd Access	Second Access Projects
Comm Plan	Projects that Support Community Planning Goals
Local Circ	Projects that Provide Local Circulation and/or Community Access

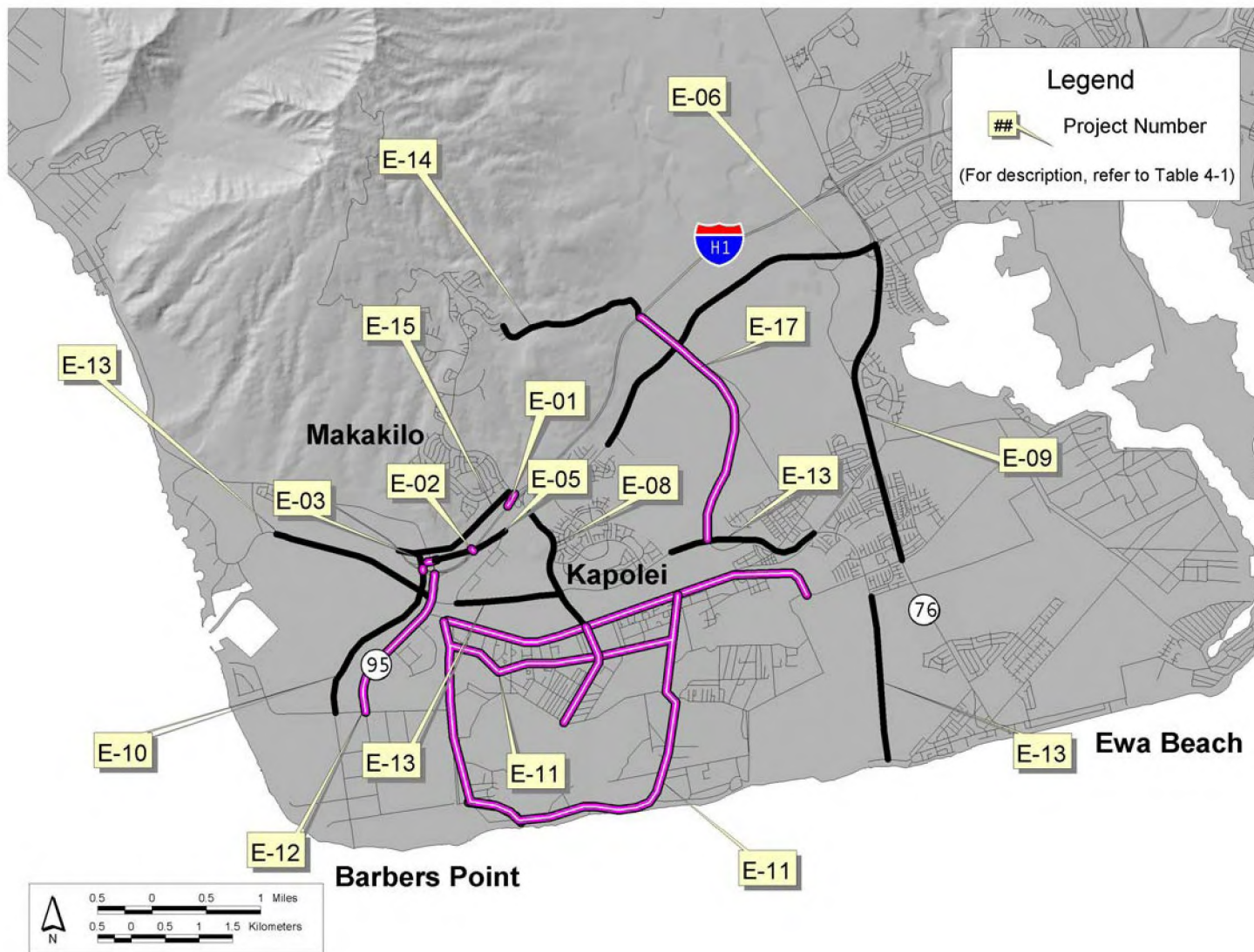
*****P-36:** Project P-36 was designated by the Policy Committee as the lowest priority for selected projects, and extensive review and study will be required.

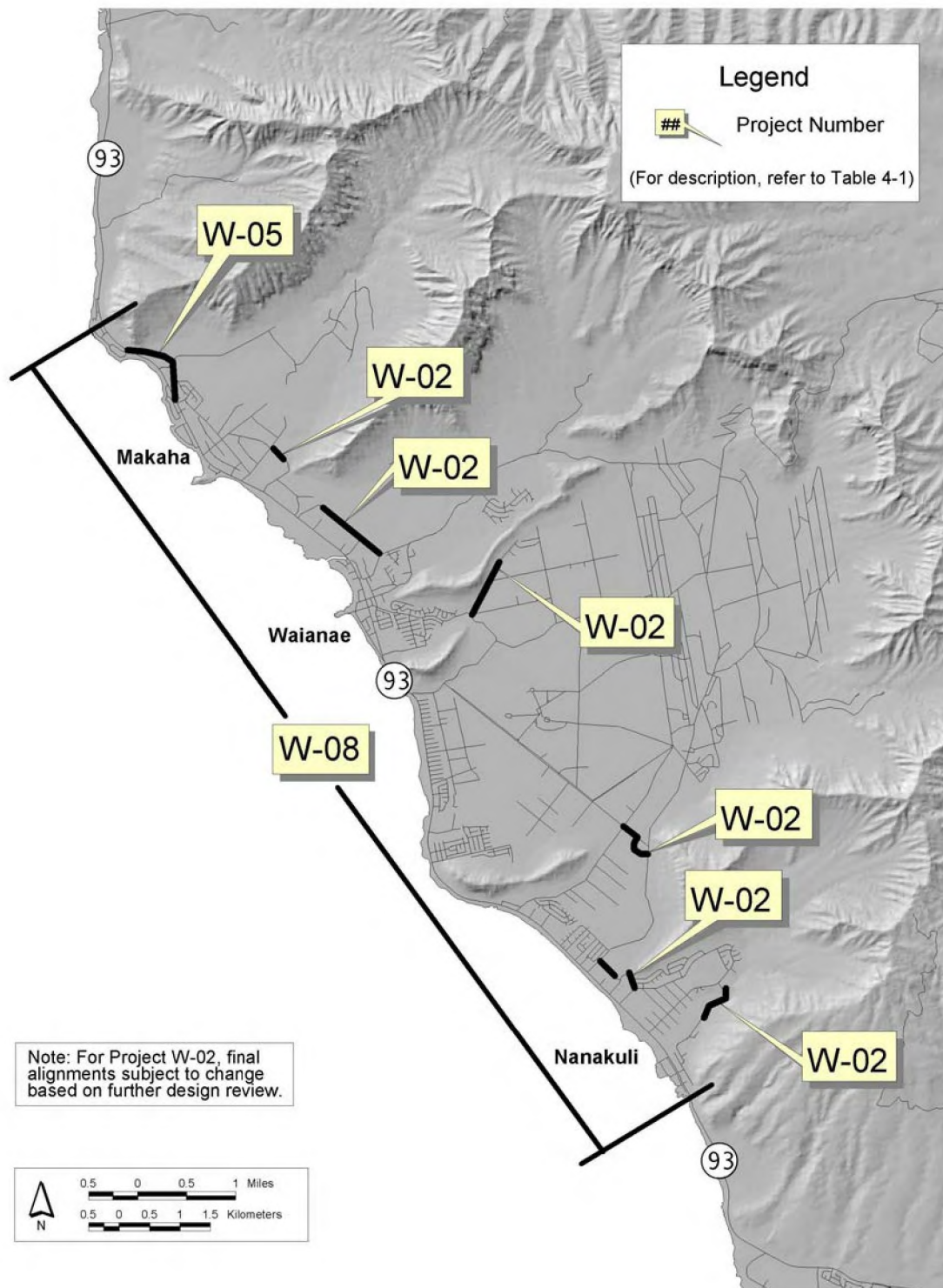


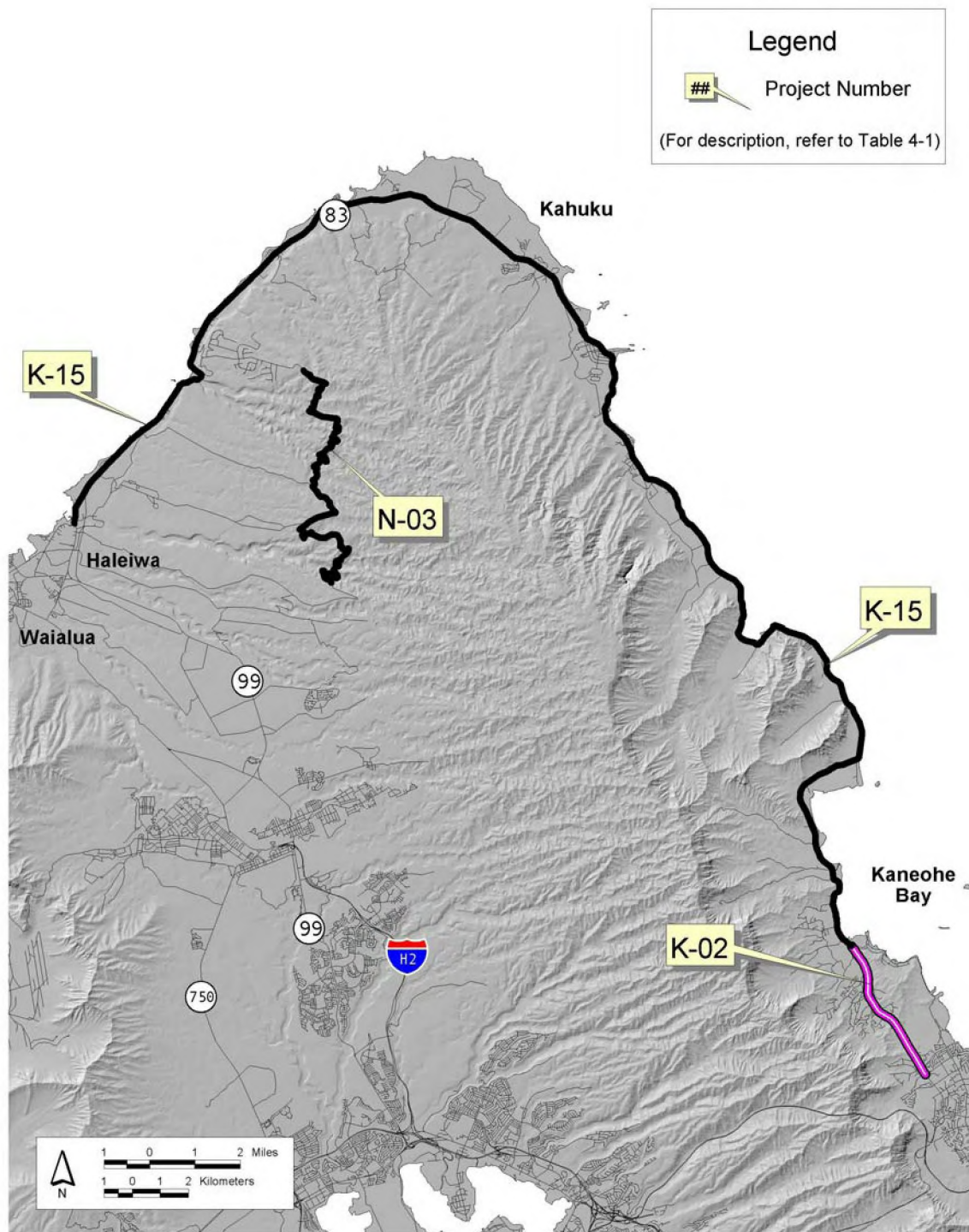




Note: For more details, refer to the City's DEIS on the project. Final alignment subject to further study during the Final EIS for the project.







4.8 Illustrative Projects

The TOP 2025 planning process identified many potential projects that could prove beneficial as transportation improvements for the island of Oahu, but revenue projections could not support inclusion of the projects in the TOP 2025 at this time. Table 4-2 lists those projects that were not affordable within the projected available revenue but were approved by the Policy Committee as “Illustrative Projects.” The locations for the Illustrative Projects are shown on Figure 4-7.

Illustrative Projects are those for which a need has been demonstrated and which should be considered as high priorities for inclusion in the regional transportation plan if additional funding sources are identified. In particular, the first project listed in Table 4-2 (Waianae Second Access across the Waianae Range) was selected by the Policy Committee as top priority for including in the TOP 2025 should additional funds become available.

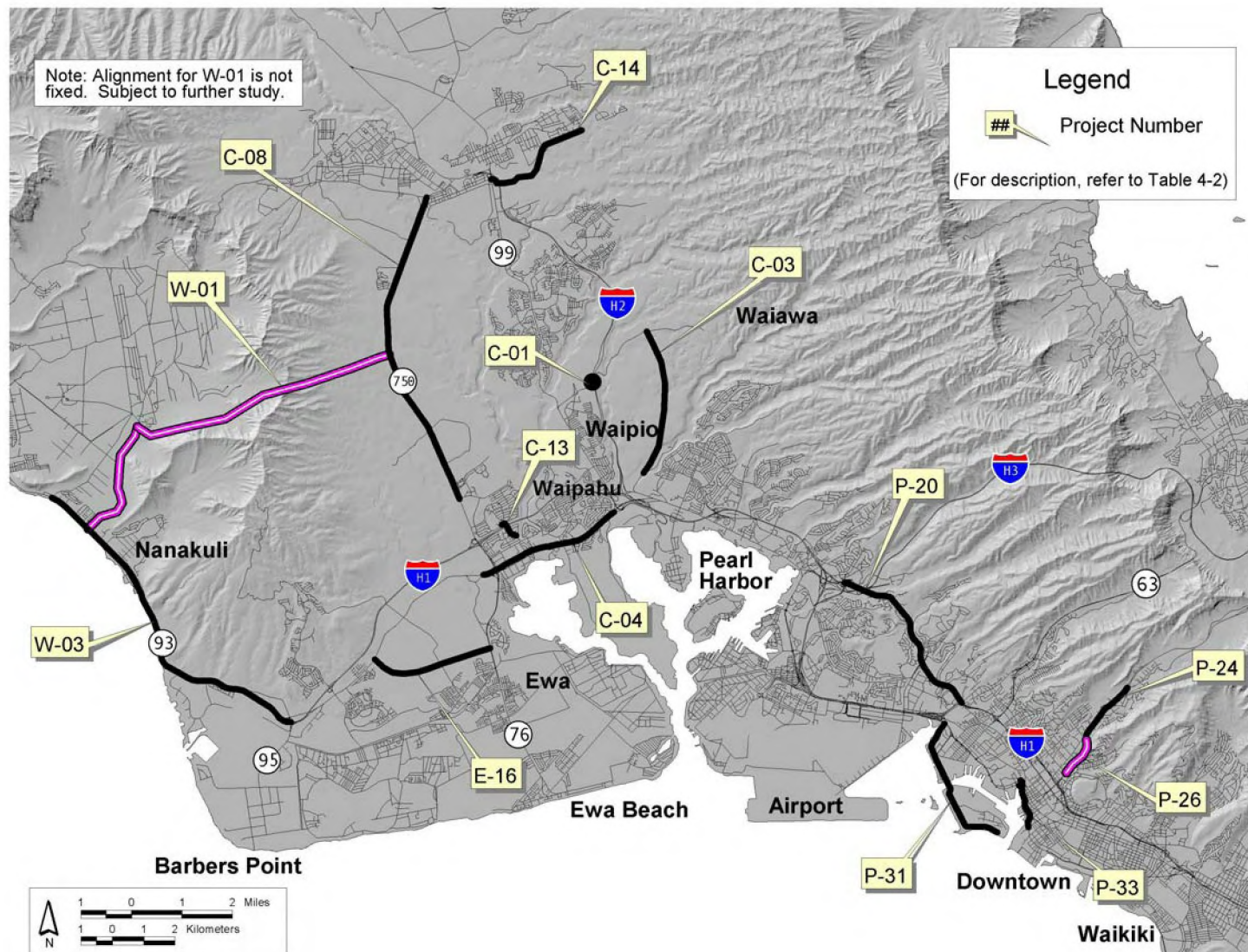
Table 4-2
Illustrative Projects for Consideration in Future RTP Updates

Area	Category**	Project Number	Project Description	Estimated Cost (Millions of Year 2000 \$)
Waianae	2nd Access	W-1	Waianae Second Access across Waianae range *	\$ 515.0
CO	Comm Plan	C-1	H-2 Waipio Interchange improvements	\$ 18.4
CO	Local Circ	C-13	Village Park Connector Rd.	\$ 2.7
CO	2nd Access	C-14	Wahiawa additional access from south	\$ 50.0
CO	Comm Plan	C-3	Central Mauka Rd., 2.5 mile project to Waiawa	\$ 13.0
CO	C Relief	C-4	Farrington Hwy. widening Kunia to Waiawa	\$ 59.8
CO	C Relief	C-8	Kunia Rd. widening Royal Kunia to Schofield	\$ 93.8
Ewa	Comm Plan	E-16	East Kapolei Collector Farrington Hwy. to Fort Weaver Rd.	\$ 17.3
PUC	C Relief	P-20	Moanalua Fwy. Widening	\$ 51.3
PUC	Ops/Safety	P-24	Pali Hwy. reconstruction Waokanaka to Wyllie St.	\$ 45.0
PUC	C Relief	P-26	Pali Hwy. WB third lane Wyllie to Kuakini	\$ 17.8
PUC	C Relief	P-30	Sand Island Scenic Pkwy. – See P-31 (Note: Separated into Marina Road and Fort Armstrong Tunnel. Sand Island Scenic Parkway would become part of the Marina Road)	See P-31
PUC	C Relief	P-31	Marina Rd. (combined with P-30)	\$ 315.8
PUC	Comm Plan	P-33	Nimitz Blvd. (lane reduction-convert to 4-lane boulevard)	\$ 36.4
Waianae	C Relief	W-3	Farrington Hwy. widening Kalaeloa Blvd. to Hakimo Rd., including intersection of Lualualei Naval Rd.	\$ 72.4
			Total for Potential Projects in Illustrative Category	\$1,308.7

* Project W-1 selected by Policy Committee as top priority for future funding among Illustrative Projects

****Categories:**

<i>C Relief</i>	<i>Congestion Relief Projects</i>
<i>Transit/Alt</i>	<i>Transit and Alternative Modes Projects</i>
<i>Ops/Safety</i>	<i>Operations and Safety Projects</i>
<i>2nd Access</i>	<i>Second Access Projects</i>
<i>Comm Plan</i>	<i>Projects that Support Community Planning Goals</i>
<i>Local Circ</i>	<i>Projects that Provide Local Circulation and/or Community Access</i>



5.0 Performance of the TOP 2025

This chapter describes how the Transportation for Oahu Plan (TOP) 2025 performs with respect to meeting the goals and objectives adopted for the plan. The following sections discuss the TOP 2025 effectiveness in meeting the adopted goals and objectives for the following areas:

- Transportation Service
- Quality of Life
- Community Responsibility
- Demand Management

5.1 Transportation Service Goal

The first goal of the TOP 2025 deals with transportation service and states the following:

- Develop and maintain Oahu's islandwide transportation system to ensure efficient, safe, convenient and economical movement of people and goods.

The objectives associated with the Transportation Service goal were described in Chapter 1.

The OMPO travel demand model was used to compare the 2025 Baseline with the TOP 2025 scenario to assess how the transportation system will function in the areas of travel time, congestion and transit service. The OMPO travel demand model was coded to reflect the proposed transportation system improvements as described in the list of TOP 2025 projects in Chapter 4. The result of this model run with the TOP 2025 projects was then compared to the 2025 Baseline conditions.

The land use assumptions did not change between the two future scenarios for the year 2025. Therefore, the total person trips were essentially the same for the two future scenarios (slightly more than 4.1 million trips per day) with approximately 3.5 million of the trips made by residents.

5.1.1 Transit System Performance

The transit system is expected to gain additional riders with the proposed TOP 2025 investments. Table 5-1 shows how the mode share for trips by residents in the 2025 Baseline conditions will compare to the TOP 2025 future conditions. As can be seen in this table, the transit trips by residents are projected to increase in the TOP 2025 scenario by 30,000 trips per day (an increase of over 12 percent from the 2025 Baseline forecasts), which translates to a 1 percent increase in the transit mode share for residents.

Table 5-1
Mode Share for Trips by Residents (2025 Baseline to TOP 2025 Scenario)

Mode	2025 Baseline Daily Person Trips		TOP 2025 Scenario Daily Person Trips	
	Number*	Percent*	Number*	Percent*
Driving	2,876,000	82%	2,845,000	81%
Transit	239,000	7%	269,000	8%
Bicycle and walking	383,000	11%	384,000	11%
Total Daily Person Trips by Residents	3,498,000	100%	3,498,000	100%

**Note: All numbers have been rounded.*

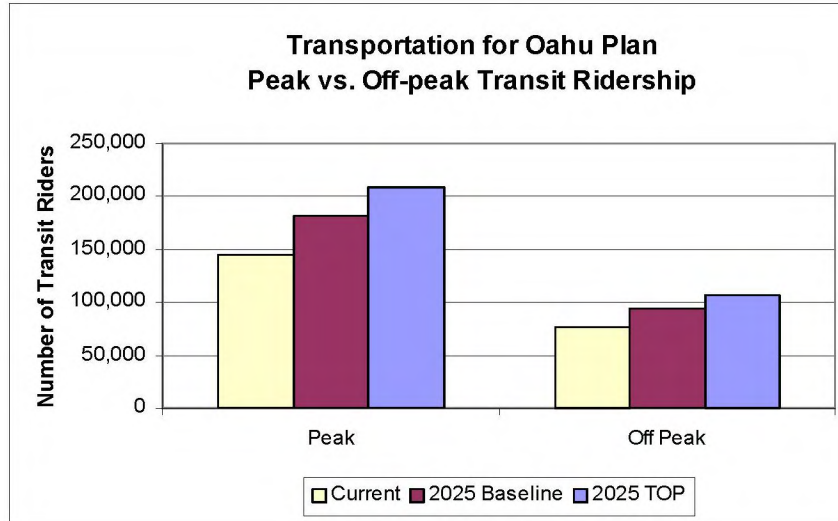
When visitor transit trips are included with the transit trips by residents, transit ridership is projected to increase by more than 40,000 riders per day over the 2025 Baseline (an increase of more than 14 percent). Table 5-2 compares these forecasts by peak and off-peak periods; the results are shown graphically in Figure 5-1.

Table 5-2
Transit Ridership Comparison

	Existing (Year 2000)	2025 Baseline	TOP 2025 Scenario	Increase from 2025 Baseline to TOP 2025	Percent Increase
AM and PM Peak Periods	144,200	181,500	208,600	+ 27,100	14.9%
Off Peak	77,000	94,200	107,300	+ 13,100	13.9%
Total	221,200	275,700	315,900	+ 40,200	14.6%

**Note: All numbers have been rounded.*

Figure 5-1
Transit Ridership by Year



5.1.2 Highway System Performance

The following three tables show how the travel statistics of vehicle miles traveled (VMT), vehicle hours traveled (VHT) and vehicle hours of delay are projected to change from the 2025 Baseline condition to the TOP 2025 scenario.

Table 5-3
Change in VMT per Day (2025 Baseline to TOP 2025 Scenario)

Facility Type	VMT per Day*		Change in VMT	
	2025 Baseline	TOP 2025 Scenario	Absolute	Percent
Freeway	6,782,404	6,794,426	12,022	0%
Expressway	1,771,805	1,712,912	-58,893	-3%
Arterial	5,412,696	5,183,770	-228,926	-4%
Other	3,723,286	3,581,009	-142,277	-4%
Total	17,690,191	17,272,117	-418,074	-2%

*VMT per day = Vehicle miles traveled per day.

(Traffic assigned to roadway facility multiplied by facility length in miles.)

Table 5-4
Change in VHT per Day (2025 Baseline to TOP 2025 Scenario)

Facility Type	VHT per Day*		Change in VHT	
	2025 Baseline	TOP 2025 Scenario	Absolute	Percent
Freeway	224,630	190,808	-33,822	-15%
Expressway	48,362	41,591	-6,771	-14%
Arterial	297,498	255,249	-42,249	-14%
Other	213,965	200,797	-13,168	-6%
Total	784,455	688,445	-96,010	-12%

VHT per day = Vehicle hours traveled per day.

(Traffic assigned to roadway facility multiplied by travel time for each travel period:

A.M. peak, P.M. peak and midday.)

Table 5-5
Change in Hours of Delay (2025 Baseline to TOP 2025 Scenario)

Facility Type	Hours of Delay*		Change in Delay	
	2025 Baseline	TOP 2025 Scenario	Absolute	Percent
Freeway	120,843	87,022	-33,821	-28%
Expressway	19,748	13,912	-5,836	-30%
Arterial	152,590	116,565	-36,025	-24%
Other	74,777	67,066	-7,711	-10%
Total	367,958	284,565	-83,393	-23%

**Hours of delay: Difference between VHT using the actual congested travel times and what the VHT would be if all roadway facilities operated at the free-flow travel time.*

The VMT on the roadway system does not change substantially from the 2025 Baseline to the TOP 2025 Scenario. The result was expected since the same trips were assigned to both the TOP 2025 and Baseline systems. The slight decrease in VMT is explained by mode shifts to transit, the effects of Transportation Demand Management (TDM) programs and by a reduction in circuitry of auto trips. In the 2025 Baseline, some auto trips are assigned to routes that “drive the long way around” to avoid congested facilities. As the TOP 2025 projects relieve this projected congestion, the circuitousness of auto trips is reduced.

For the two strongest indicators of congestion on the roadway system (vehicle hours traveled and vehicle hours of delay) the TOP 2025 transportation system performs at congestion levels that are significantly less than the 2025 Baseline. Vehicle hours traveled declines by 12 percent and the hours of delay on the roadway system declines by 23 percent. These results are also shown graphically in Figure 5-2 and Figure 5-3.

Figure 5-2
Vehicle Hours of Travel by Facility Type

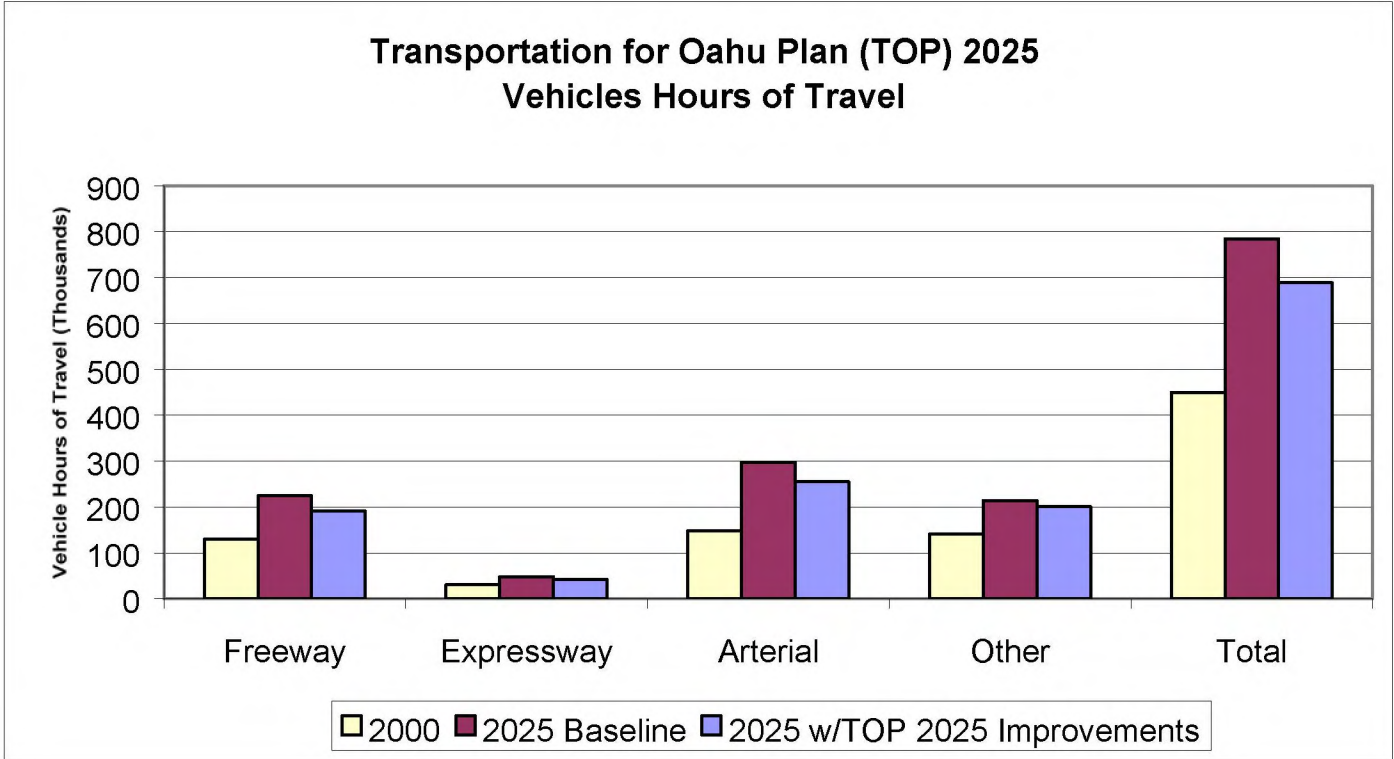
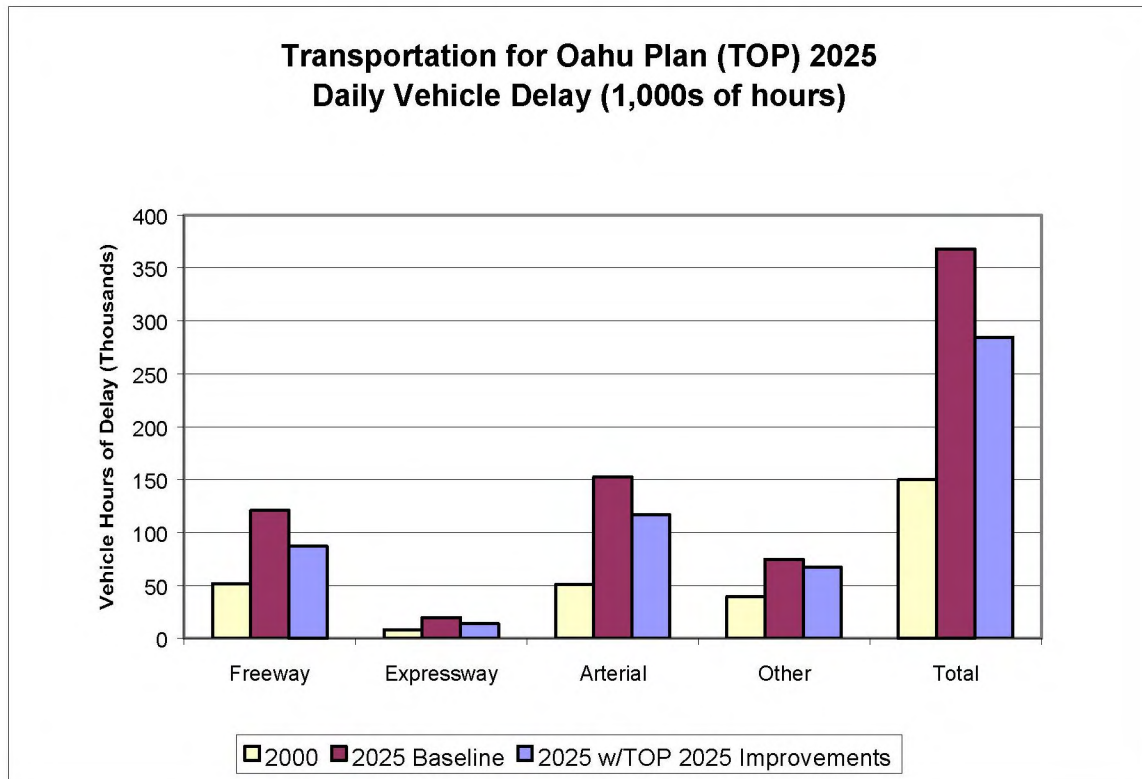
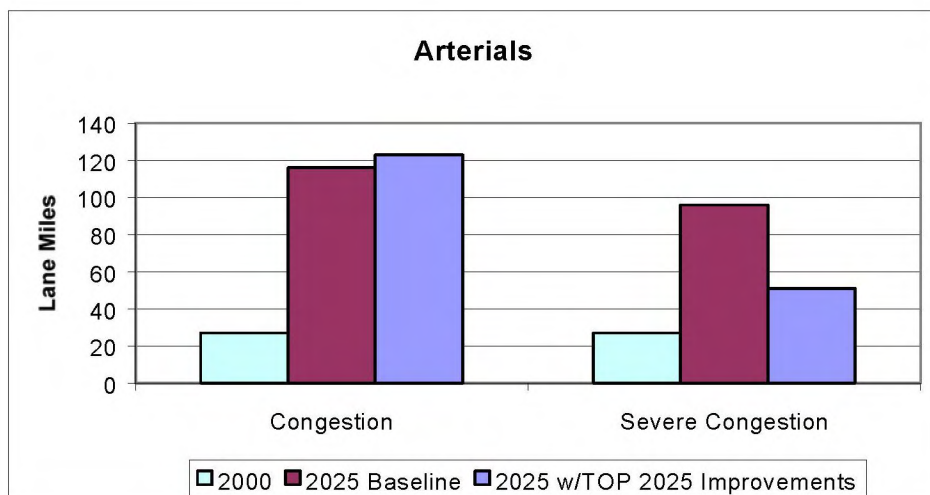
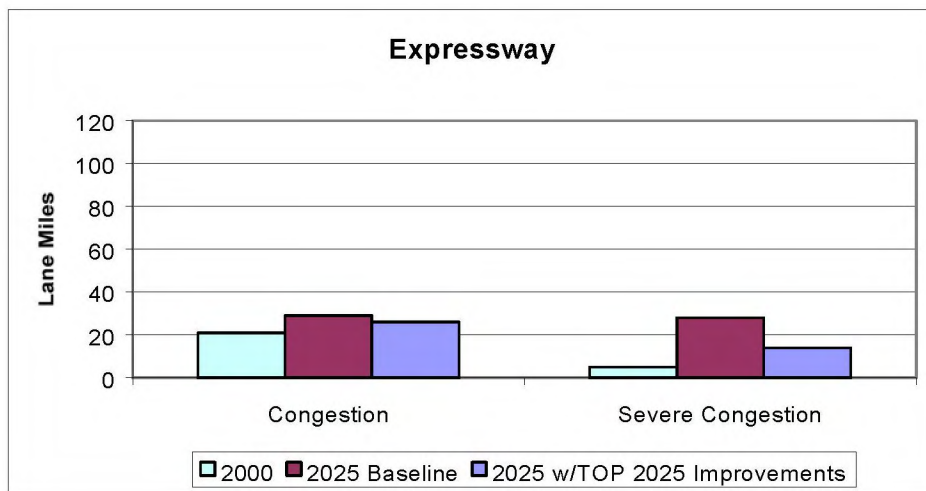
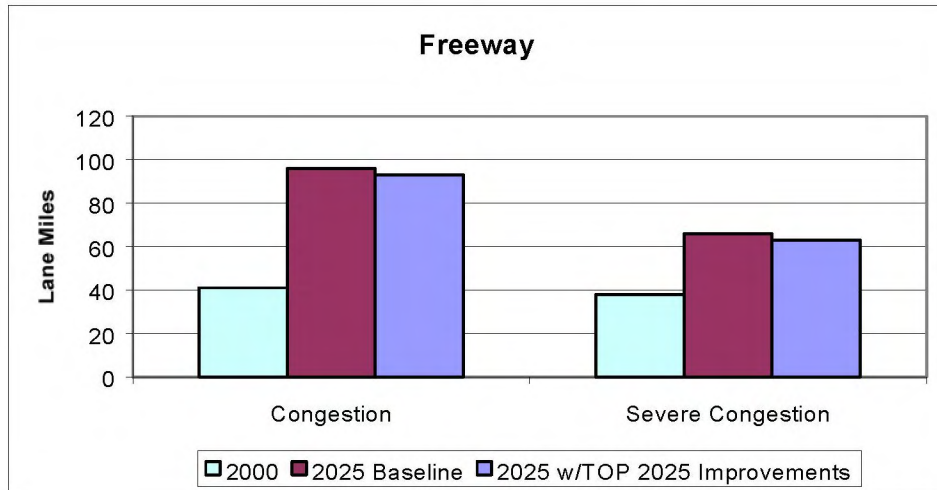


Figure 5-3
Vehicle Hours of Delay by Facility Type



The roadway system was evaluated to determine projected traffic operating conditions during the morning peak hour for the 2025 Baseline as compared to the TOP 2025 scenario. Figure 5-4 shows lane miles of both severe congestion (volume-to-capacity ratio is projected to be greater than 1.0) and congested conditions (volume-to-capacity ratio is projected to fall between 0.8 and 1.0). For each facility type, congestion and severe congestion are much more prevalent than in the current situation. However, the TOP 2025 system is projected to have noticeably fewer lane miles of congestion and severe congestion than the 2025 Baseline. One interesting point: in the comparison of arterial lane miles, the “Severe Congestion” category is reduced by approximately half, while the “Congestion” category is increased slightly. The slight increase in “Congestion” lane miles is due to the large number of lane miles of “Severe Congestion” moving into the lower category of “Congestion” as the TOP 2025 projects relieve severe congestion on some of the arterial facilities.

Figure 5-4
Congested Lane Miles in the Morning Peak



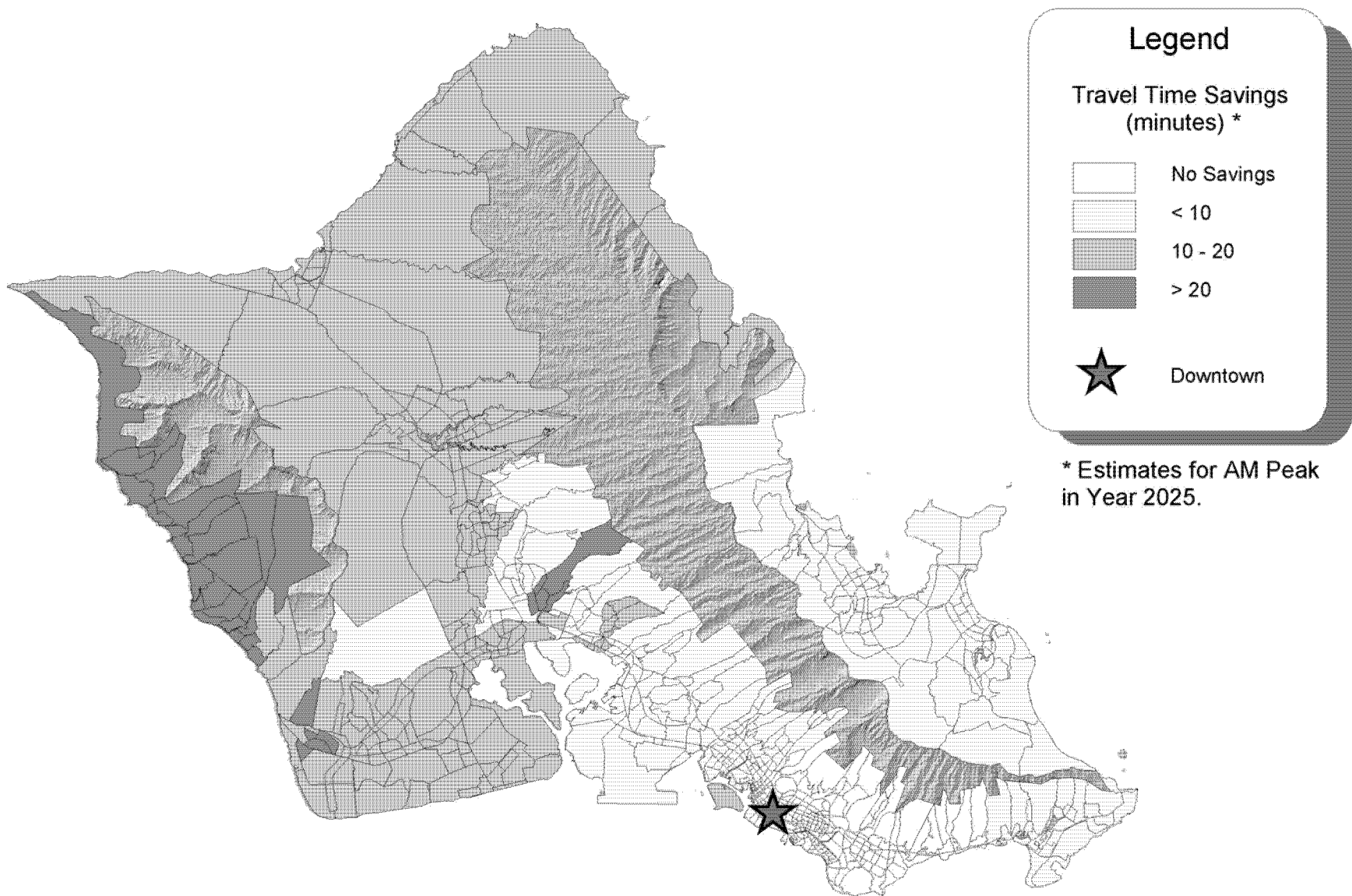
An evaluation also was made to determine how travel time during the morning peak hour would change between the 2025 Baseline and the TOP 2025 scenario. Figure 5-5 through Figure 5-8 show the projected travel time savings during the morning peak hour for trips to key destinations on Oahu: Downtown, Waikiki, Pearl Harbor and Kapolei. The travel time savings are mapped by traffic analysis zone (TAZ) and then stratified by the average amount of time saved per trip from the TAZ to the destination shown on the map. The darkest shading on the maps shows TAZs with travel time savings greater than 20 minutes. As can be seen by these maps, large portions of Oahu are projected to realize travel time savings of greater than 10 minutes during the morning peak hour for future travel conditions in 2025 with the proposed improvements of the TOP 2025 projects.

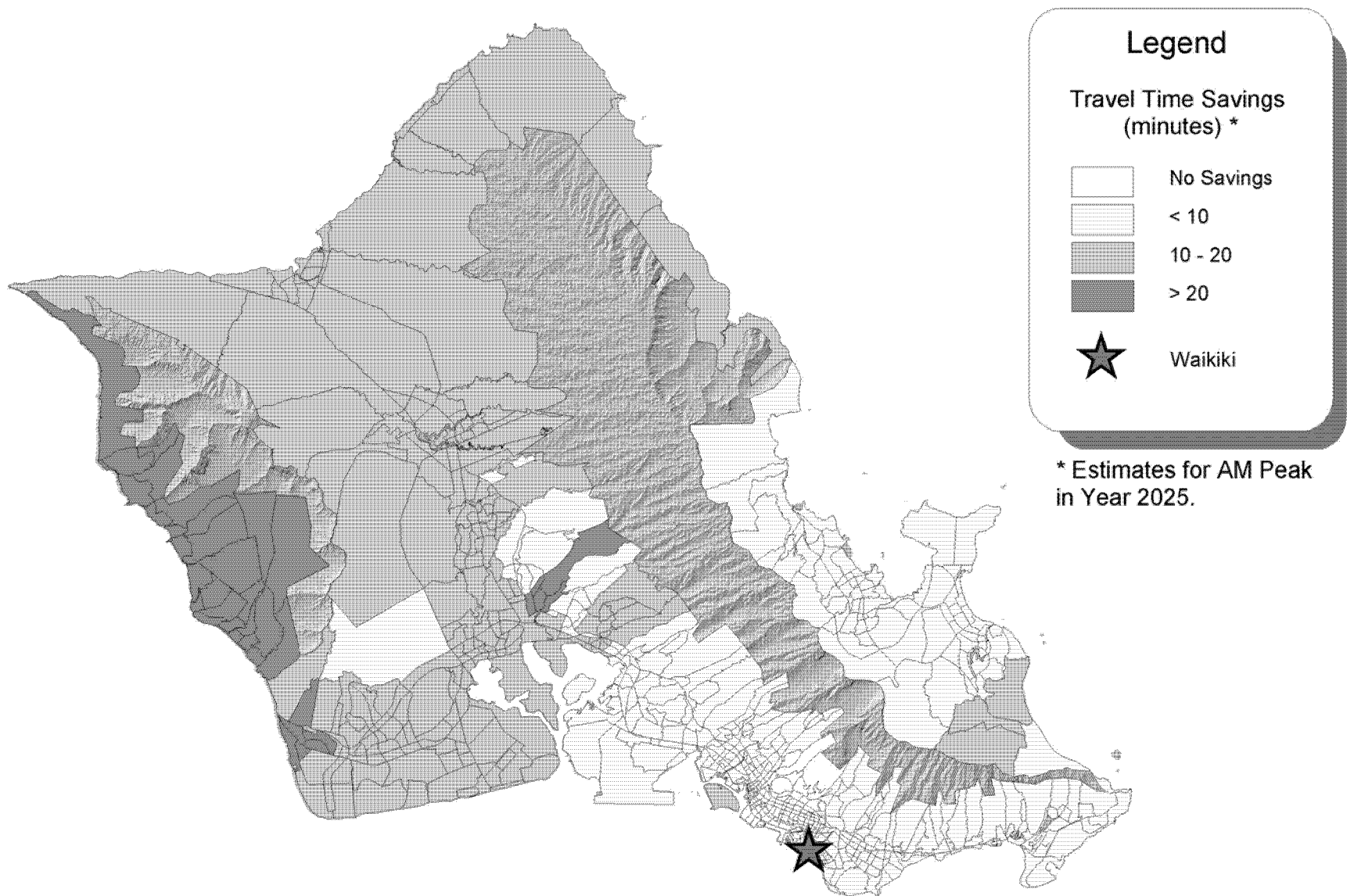
5.2 Remaining Goals and Overall TOP 2025 Performance

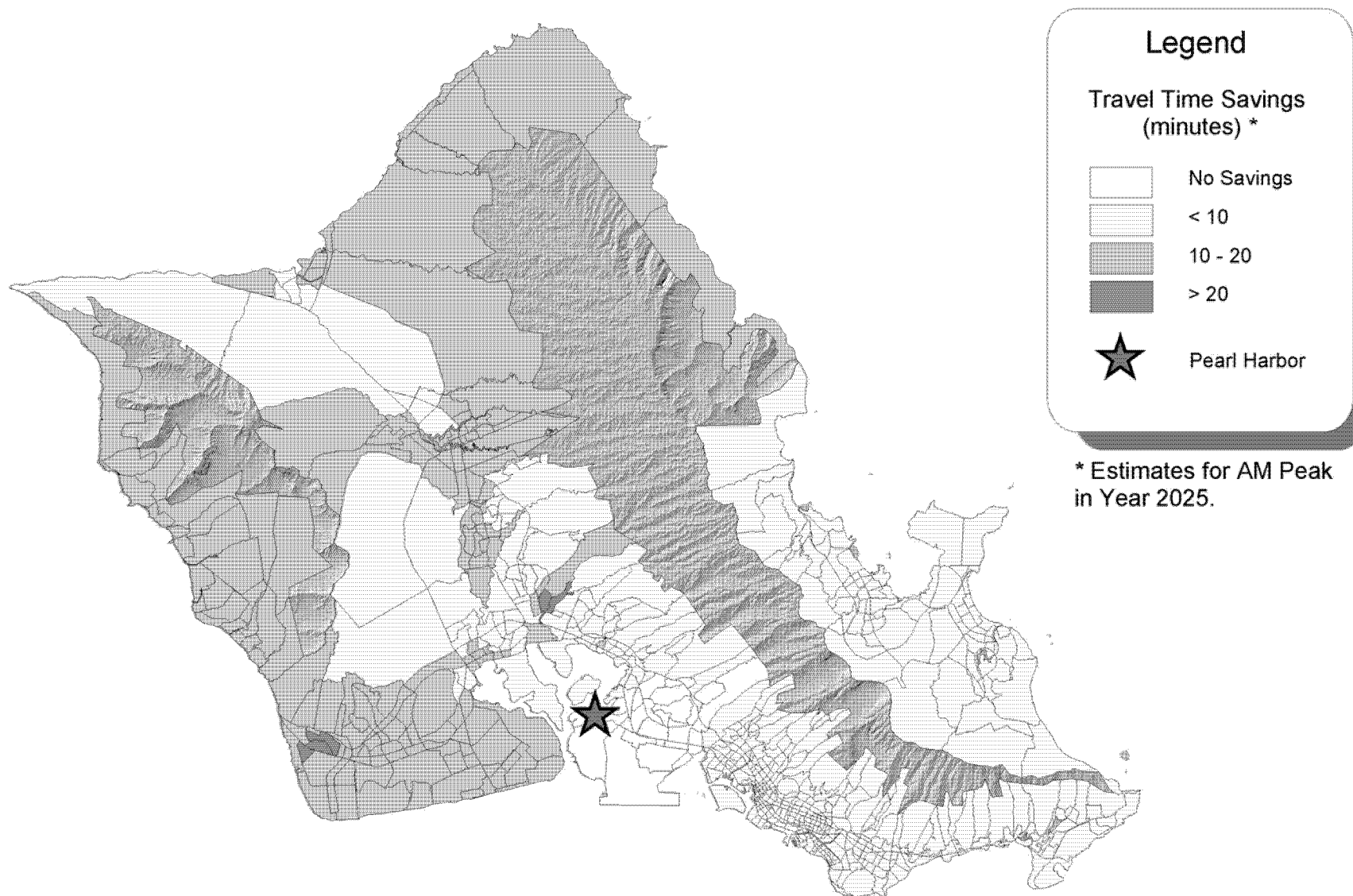
In addition to the transportation service goal, three other goals have been adopted for the TOP 2025. These are:

- Develop and maintain Oahu’s transportation in a manner that maintains environmental quality and community cohesiveness.
- Develop and maintain Oahu’s transportation in a manner that is sensitive to community needs and desires.
- Develop a travel demand management system for Oahu that optimizes use of transportation resources.

Table 5-6 summarizes how the TOP 2025 performs with respect to the specific objectives adopted for each of the goals adopted by the OMPO Policy Committee.







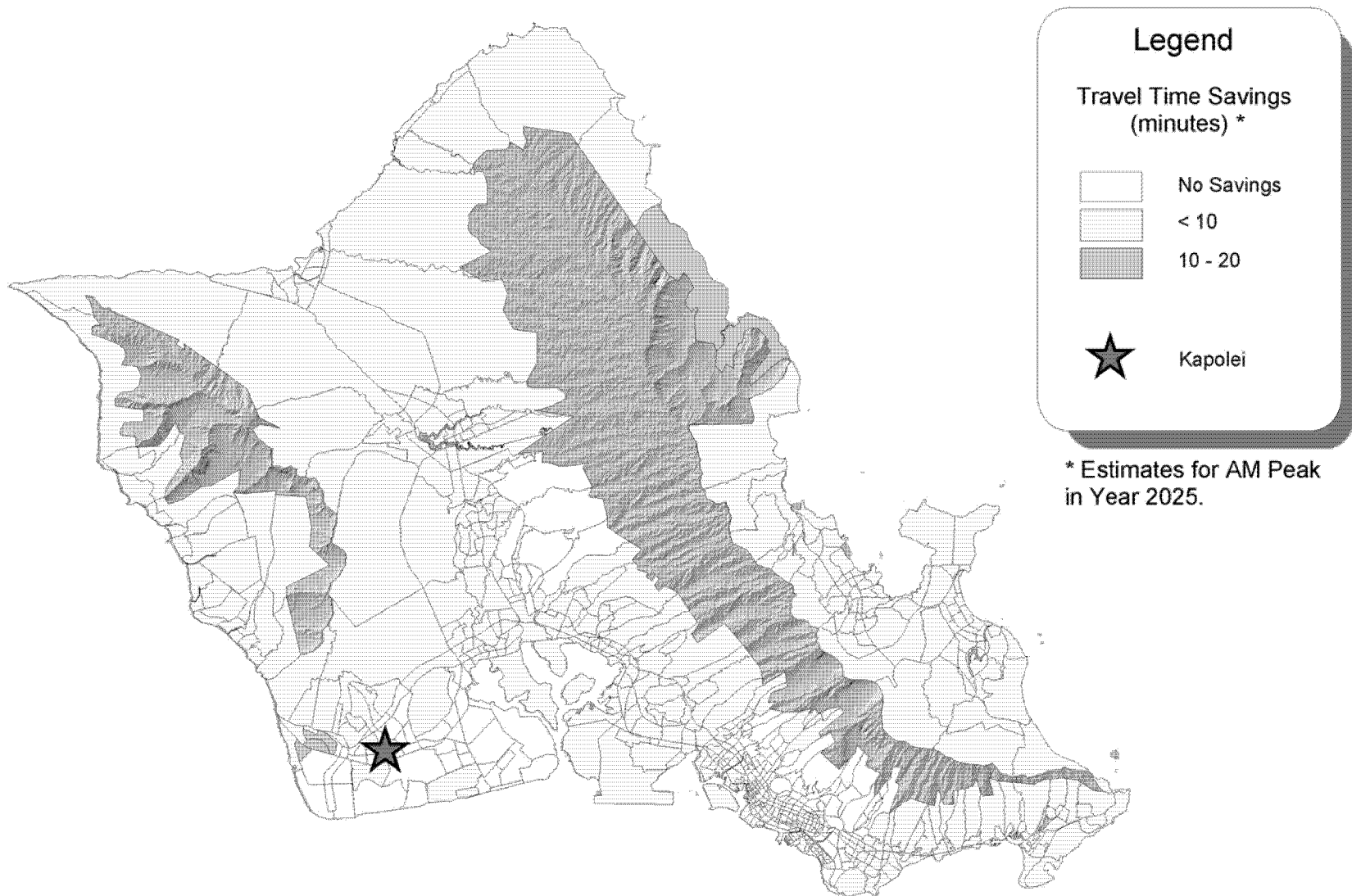


Table 5-6
TOP 2025 Performance

Objectives for Transportation Service Goal	TOP 2025 Performance
1. Increase peak period person-carrying capacities on Oahu's transportation network.	Average travel times decrease and congested lane miles decrease with TOP 2025.
2. Provide convenient and cost-effective transit service to Oahu transit riders.	Transit ridership increases by approximately 15% to more than 300,000 riders per day.
3. Plan, design, construct and operate highway and transit facilities and service to communities on Oahu in a cost effective manner.	Vehicle hours of delay decrease with the TOP 2025 investment.
4. Encourage the availability of adequate public and private services between Waikiki, the airport, and other tourist destinations.	Proposed transit investment will better serve these destinations.
5. Promote intermodal efficiency of harbor terminal facilities, airport terminal facilities and land transportation systems.	Demonstrated improvements in travel time will better serve these intermodal facilities. Improved harbor operations supported by Project P-35.
6. Ensure that no person shall, on the grounds of race, color, sex, national origin, age, physical handicap, or economic status, be excluded from reasonable access to transportation services, as provided for by federal, state and local legislation.	See Section 5.3
7. Ensure user and community safety in the physical design and operation of transportation facilities.	17 of the TOP 2025 projects are proposed to address operations and safety issues that were identified during the planning process.
8. Ensure that Oahu's transportation system is planned, designed, constructed and operated in an integrated and cost-effective manner.	The plan is fiscally constrained based on evaluation of revenues expected to be available.
9. Enhance the performance of Oahu's transportation system through the use of operation management strategies, such as Intelligent Transportation System (ITS), Transportation System Management (TSM) and Transportation Demand Management (TDM).	The plan does include ITS and TSM/TDM projects.
10. Enhance the integration and connectivity of the regional transportation system, across and between alternative modes.	Intermodal connections provided on BRT system. Harbor operations to be improved by proposed Sand Island tunnel.
11. Promote planning, design and construction of transportation facilities and systems to support economic development for Oahu's business community.	Infrastructure investment will support Ewa development area. Harbor operations and access to airport also supported. BRT integral to land use planning and development goals.

(continued)

Table 5-6 (continued)

Objectives for Transportation Service Goal	TOP 2025 Performance
12. Provide major rehabilitation / renewal / modernization of facilities in sufficient magnitude to ensure continued effective operation.	Maintenance and rehabilitation addressed in financing plan.
Objectives for Quality of Life Goal	TOP 2025 Performance
13. Develop and maintain Oahu's transportation system to meet noise, air and water quality standards set by federal, state and local agencies.	<ul style="list-style-type: none"> - Slight decline (2%) in VMT with TOP 2025. 12% decrease in VHT with TOP 2025. Both will result in lower emissions from motor vehicles. - Noise and water quality standards will need to be addressed during project implementation.
14. Preserve Oahu's cultural integrity, sensitive natural resources, including beaches and scenic beauty, including sea and mountain vistas.	<ul style="list-style-type: none"> - Potential negative impacts of proposed projects were considered during project evaluation for inclusion on the TOP 2025. Some projects removed from consideration based on consideration of this objective. - Additional consideration of this objective will need to be addressed during project implementation.
15. Develop and maintain "low-energy" transportation facilities, including bikeways, walkways and other energy efficient elements which can be safely integrated with other transport modes.	Project I-1 and P-1 propose to implement the State and Honolulu Bicycle Master Plans for the TOP 2025. Sidewalks will be constructed with many of the proposed transportation improvements, particularly those that support community-planning goals.
16. Encourage energy conservation in transportation.	<ul style="list-style-type: none"> - Lower VMT and VHT will support lower energy consumption. - TOP 2025 project also includes major investments in transit and bikeways, which also support lower energy consumption.
17. Minimize disruption of existing neighborhoods due to transportation system construction.	<ul style="list-style-type: none"> - Potential negative impacts of proposed projects were considered during project evaluation for inclusion on the TOP 2025. Some projects removed from consideration based on consideration of this objective. - Additional consideration of minimizing disruption to existing neighborhoods will need to be addressed during project implementation. - The BRT project was carefully planned to be compatible with existing neighborhoods

(continued)

Table 5-6 (continued)

Objectives for Quality of Life Goal	TOP 2025 Performance
18. Ensure that transportation facility design and maintenance are compatible with the existing and planned physical and social character of new and existing developments.	<ul style="list-style-type: none"> - Proposed projects were considered that support community planning goals. - Additional consideration of meeting this objective will need to be addressed during project implementation. - The BRT project was carefully planned to be compatible with existing and planned developments
19. Maintain and upgrade the existing and future transportation system in a manner that is aesthetically pleasing, including incorporation of landscaping and tree planting.	<ul style="list-style-type: none"> - Project budgets generally include adequate funding to incorporate aesthetic elements. - Additional consideration of meeting this objective will need to be addressed during project implementation.
20. Develop transportation contingency plans for energy shortages, natural and manmade disasters and other emergencies that would impact the transportation system.	<ul style="list-style-type: none"> - Projects that would provide second access routes to parts of Oahu with limited access routes were considered during the plan development. Not all identified needs could be funded. - Additional planning will be required to fully address this objective.
21. Planning for transportation facilities in Waikiki should reflect the Pedestrian First Policy as adopted by the Joint Waikiki Task Force in 1999.	<ul style="list-style-type: none"> - Proposed transit investments will help to support pedestrian activities in Waikiki. - Additional consideration of meeting this objective will need to be addressed during implementation of projects in the Waikiki area.
Objectives for Community Responsibility Goal	TOP 2025 Performance
22. Maintain and develop the transportation system to reinforce Oahu's planned population distribution and land use development policies through coordinated efforts of the public and private sectors, including the Sustainable Community Plan (SCP) planning efforts.	<ul style="list-style-type: none"> - 11 of the TOP 2025 projects were proposed with the intent of supporting community-planning goals. - Funding from the private sector has been included in the overall financial plan for the TOP 2025 - The BRT project was carefully planned to be compatible with planned development patterns.

(continued)

Table 5-6 (continued)

Objectives for Community Responsibility Goal	TOP 2025 Performance
23. Encourage innovation in planning, design and maintenance of transportation services and facilities that support community goals.	<ul style="list-style-type: none"> - Transportation services and facilities are included in the TOP 2025 that go beyond traditional capacity improvements to highway facilities. - Additional consideration of innovations will need to be addressed during project implementation. - The BRT project was carefully planned to be compatible with community goals
24. Base transportation improvements for Oahu on a cooperative, comprehensive and continuing planning process with emphasis on community involvement.	<ul style="list-style-type: none"> - Extensive public input was solicited throughout the TOP 2025 planning process. - Public input was also solicited from populations that have special needs.
Objectives for Demand Management Goal	TOP 2025 Performance
25. Encourage increases in system-wide ride-sharing on Oahu.	- TDM Programs and Vanpool Program included in the TOP 2025 recommendations. (These include expansion of zipper lane, ride share programs and HOV lanes.)
26. Maximize the efficient use of the transportation system.	<ul style="list-style-type: none"> - Transit ridership increases under the TOP 2025 plan. - VMT and VHT decrease under the TOP 2025 plan.
27. Encourage programs that reduce use in single occupancy vehicle travel and vehicle miles traveled.	- TDM and the BRT projects included in the TOP 2025 recommendations.

5.3 Environmental Justice Considerations

An additional consideration for the TOP 2025 evaluation is how well the plan responds to federal requirements that transportation plans be consistent with Title VI of the Civil Rights Act of 1964 and the additional requirements in the Environmental Justice Order that amplified the requirements of Title VI. Presidential Executive Order 12898 signed on February 11, 1994, is called the Executive Order on Environmental Justice. It requires federal agencies to take appropriate and necessary steps to identify and avoid disproportionately high and adverse effects of federally assisted projects on minority and low-income populations' health or environment.

The public involvement plan used for development of the TOP 2025 recommendations included specific elements to identify populations with special needs under Title VI and Environmental Justice. Targeted outreach efforts were designed to solicit input from these populations, and the input received was considered during development of the TOP 2025. Groups with special needs were identified for outreach efforts. A list of over 70 organizations working with special needs populations was developed, and all were

contacted to invite their participation in the process. These organizations were also informed of the regional and islandwide meetings.

Eight focus groups were conducted for representative special needs groups. These included low-income groups (First to Work and Homeless Solutions), senior citizen groups (Seniors' Council) and persons with disabilities (Hawaii Centers for Independent Living and Department of Transportation Services Committee for Accessible Transportation). An additional islandwide focus group composed of randomly selected individuals was held in January 2001.

Some special needs groups suggested that all project materials be made available on the OMPO Web site, and that comments be encouraged via the Web site and e-mail. This service was provided, and the material supplied at the regional and islandwide meetings was made available via the Web site. All meetings were held in accessible locations on bus routes during non-work hours, and special accommodations were available on request.

The meeting invitations were mailed to a list of over 9,000 people and faxed to the special needs contact list. In addition to advertisements run in *MidWeek*, a press release for each meeting was sent to a list of over 35 ethnic, foreign language and community publications with the purpose of providing notification to minority groups.

The specific impacts of a proposed project on the populations identified under the Environmental Justice regulations cannot be evaluated at the level of a regional plan. OMPO has established procedures to assure that as projects are proposed for funding, the Transportation Improvement Program will be evaluated to verify that the projects comply with Title VI and Environmental Justice regulations, and OMPO has a current project in their work program to upgrade their monitoring capabilities.

The following types of populations are required to be tested and evaluated under the Environmental Justice regulations:

- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Other Pacific Islander
- Hispanic
- "Other" Race designation
- Low Income (using federal poverty guidelines from the Department of Health and Human Services for a family of four)

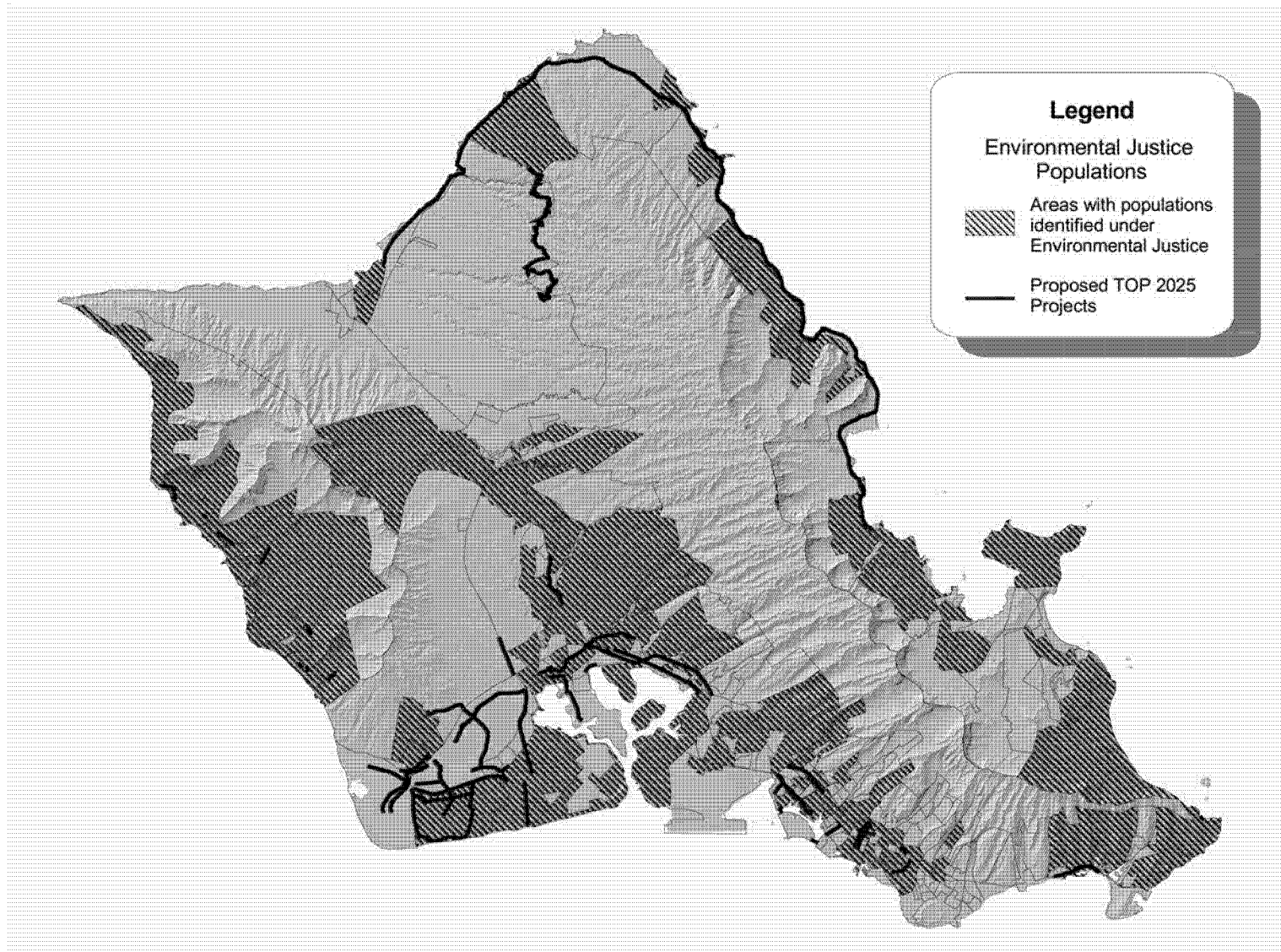
The Environmental Justice (EJ) populations identified by OMPO through a separate planning process are shown in Figure 5-9, along with the TOP 2025 project locations. The shaded areas in Figure 5-9 show the locations of minority and low income

populations on Oahu. The following process was used to identify areas with concentrated minority ethnic populations:

- A block group was selected as EJ if the standardized score of the percentage of any of the defined ethnic minorities, standardized over all block groups, equals or exceeds 1.0.
- A block group was selected as EJ if the standardized score of the percentage of families in poverty equals or exceeds 1.0.
- A block group was selected as EJ if the standardized score of the percentage of persons of Hispanic ethnicity or culture exceeds 1.0.
- Remove from the set of blocks considered any which are wholly on federal military base grounds, since many of these areas are not accessible for state and county transportation planning purposes.

This results in the selection of any block group with a concentration of one or more minorities, and any block group with more than the mean percentage of families at or above the poverty level.

As can be seen in the Figure 5-9, the proposed TOP 2025 improvements will help to provide improved transportation service in the areas with the identified Environmental Justice populations. More specific evaluations will be done when TOP 2025 projects are programmed for funding.



6.0 TOP 2025 Funding

6.1 Project Financing

Section 2.8 of this report provided information on the transportation funding outlook for funding sources currently in place. These are shown in Table 6-1, using year 2000 dollars.

Table 6-1
Funding from Existing Sources
(millions of year 2000 \$)

Funding Source	Projected Revenue
FHWA funding for system preservation and highway projects	\$ 2,168 million
State/City match for FHWA highway funds	\$ 509 million
State Maintenance Funds	\$ 423 million
Federal funds for transit projects from FTA and FHWA	\$ 619 million
State and City funding for transit	\$ 470 million
Total Revenues from Existing Sources	\$ 4,189 million

The Hawaii DOT provided system preservation needs for the state highway system. These system preservation needs are funded through the State Highway Special Fund and through a portion of the FHWA funding that is available to Oahu. The system preservation needs to be funded out of FHWA funding were identified as \$42 million per year (in year 2000 dollars), or \$1.05 billion over the life of the TOP 2025.

The estimated cost of the TOP 2025 projects identified in Table 4-1 is over \$3.6 billion. The total identified need to be funded over the life of the TOP 2025 is shown Table 6-2.

Table 6-2
Total Transportation Funding Needs
(millions of year 2000 \$)

Category	Identified Need (year 2000 \$)
System Preservation for State Highways	\$ 1,050.0 million
TOP 2025 Projects	\$ 3,624.8 million
Total Identified Need	\$ 4,674.8 million

The total identified need clearly exceeds the revenues that can be assumed to be in place from existing sources (Table 6-1). Therefore, additional revenue sources were evaluated to determine funding that could reasonably be expected to become available for programming the needs identified by the TOP 2025.

6.1.1 Additional Revenue Sources

In addition to the traditional FHWA, FTA, state and local contributions to TOP 2025 projects, two other sources of revenues were identified. The first is developer contributions, which may involve private financing of selected elements of a project, facilities or land donation. The second revenue source results from the typical increases in the tax rates of the State Highway Special Fund over time. Taxes historically increase over time, and, if the last 25 years is a guide for the next 25 years, additional revenues will be available in the State Highway Special Fund to provide funding for TOP 2025 projects.

6.1.1.1 Developer Funding

In recent years, highway and transit projects increasingly have been funded with contributions from the private sector involved with development activities that could utilize the proposed improvement. This contribution level from the private sector needs to be based on local needs and constraints and can vary widely.

20 projects in the TOP 2025 highway projects have been identified as potential candidates for developer contributions. 17 of the projects are in the Ewa area, while three projects are located in Central Oahu. The total cost of these projects is estimated to be \$706 million in year 2000 dollars. The analysis assumes that 20 percent of these potential developer-funded project costs will be paid for using developer contributions. This yield contributes an additional \$141 million of revenues for the TOP 2025 highway projects.

These estimated revenues from developer contributions have been generated for TOP 2025 planning purposes only. The assumed level of revenues from developer contributions is not intended to establish developer funding obligations or commitments. Final funding obligations and commitments will be determined on a project-by-project basis through separate planning effort and negotiations.

6.1.1.2 Additional State Revenue

Over the last 25 years, the following State Highway Special Fund taxes have experienced growth in their rates of taxation. Between 1975 and 2000, the motor fuel tax rate has increased from 8.5 cents to 16 cents per gallon, the vehicle registration fee has increased from \$1 to \$20, and the rental car surcharge has increased from \$2 in 1992 to \$3 in 2000. Table 6-3 presents the historical tax rates for three of the major revenue sources of the State Highway Special Fund.

Table 6-3
State Highway Special Fund Tax Rate History

Tax Source	Year					
	1975	1979	1985	1991	1992	2000
Motor Fuel Tax	\$0.085	\$0.085	\$0.110	\$0.160	\$0.160	\$0.160
Vehicle Registration Fee		\$1.00	\$10.00	\$20.00	\$20.00	\$20.00
Rental Car Surcharge					\$2.00	\$3.00

Based on these historical increases in the tax rates, it is reasonable to assume that similar increases to the current tax rates will occur over the next 25 years and that these additional revenues will be available for system preservation projects in Oahu and the neighboring islands or for TOP 2025 projects.

An additional analysis was performed to determine a reasonable estimate of the additional potential revenues for Oahu through the year 2025. The analysis assumed that the following rates would not be exceeded:

- The motor fuel tax by more than eight cents per gallon
- The vehicle registration fee by more than \$20
- The rental car surcharge by more than \$3

The analysis indicated that Oahu could generate well over \$500 million (in 2000 dollars) in additional revenues between 2000 and 2025 using any one of several tax rate scenarios. Table 6-4 presents several potential tax growth scenarios for the 25 years of the TOP 2025. Table 6-4 demonstrates that continuing the historical growth of the State Highway Special Fund tax rates will generate similar increases in the revenues that can reasonably be assumed as available for the financing of the TOP 2025.

Table 6-4
Potential State Tax Revenue Growth Scenarios Based on Historical Trends

State Tax Growth Examples	Additional State Revenues Generated for Oahu (Year 2000 \$)
<u>Scenario 1:</u> 2005 – Increase Vehicle Registration Fee by \$20 Increase Rental Car Surcharge by \$1 2010 – Increase Fuel Tax by \$0.06 per gallon	\$505 million
<u>Scenario 2:</u> 2003 – Increase Rental Car Surcharge by \$2 2010 – Increase Rental Car Surcharge by an additional \$1	\$ 506 million

(continued)

State Tax Growth Examples	Additional State Revenues Generated for Oahu (Year 2000 \$)
<u>Scenario 3:</u> 2003 – Increase Rental Car Surcharge by \$1 Increase Vehicle Registration Fee by \$10 2010 – Increase Fuel Tax by \$0.05 per gallon 2015 – Increase Rental Car Surcharge by an additional \$1 Increase Vehicle Registration Fee by an additional \$5	\$521 million

Therefore, the TOP 2025 financial analysis makes the conservative assumption that at least an additional \$500 million will be available from tax revenue growth for funding of identified needs between 2001 and 2025.

6.1.1.3 Total Available Funding

With these additional revenue sources, the total available funding for the TOP 2025 was calculated. The results appear in Table 6-5.

Table 6-5
Total Available Funding for TOP 2025
(Millions of Year 2000 \$)

Funding Source	Projected Revenue (Millions of Year 2000 \$)
Funding from existing sources	\$ 4 ,189
Developer contributions	141
State Tax revenue growth	500
Total Available Funding	\$ 4,830

This level of funding will meet the identified needs of almost \$4.7 billion identified in Section 6.1.

6.1.2 Conclusions for Project Financing

The financial analysis demonstrates that the TOP 2025 highway and transit projects for the fiscally constrained regional transportation plan will have sufficient revenues with the inclusion of the identified additional revenue sources. The assumptions used to project the additional State Highway Special Fund revenues are reasonable based on historical trends in tax rate increases over the last 25 years. Likewise, the assumption of an average developer contribution of 20 percent of potential developer-funded projects is also reasonable. As a result of these assumptions and projections of federal, state and local highway funding levels, the revenues are sufficient to fund the TOP 2025 highway projects and even provide a \$155 million surplus as illustrated in Table 6-6.

Table 6-6
Total Highway Sources and Uses of Funds

	Total 2001 – 2025 (Millions of Year 2000 \$)
Highway Sources of Funds	
FHWA funds	\$ 2,168
State/City Match of FHWA funds	\$ 509
Developer Contributions	\$ 141
State Maintenance Funds	\$ 423
State Tax Revenue Growth	\$ 500
Total Highway Funding	\$ 3,741
Highway Uses of Funds	
System Preservation	\$ 1,050
TOP 2025 projects:	\$ 2,536
▪ Roadway Capacity and Safety	
▪ Transportation Demand Management	
▪ Intelligent Transportation Systems	
▪ Bikeways, Ferry, Vanpool Program	
Total Highway Uses	\$ 3,586
Surplus / (Deficit)	\$ 155

The identified TOP 2025 transit projects are part of the BRT project, which has undergone its own financial analysis to ensure that the funding will be available to fund the BRT system. The BRT project has been approved by the City Council as the Locally Preferred Alternative. The TOP 2025 transit projects have the revenue sources required to implement the BRT system projects as identified in the MIS/DEIS for the BRT. Table 6-7 presents a summary of the sources and uses of funds for the BRT.

Table 6-7
Total Transit Sources and Uses of Funds

	Total 2001 – 2025 (Millions of Year 2000 \$)
Transit Sources of Funds	
Federal funds	\$ 619
State funds	\$ 35
City funds	\$ 435
Total Transit Funding	\$ 1,089
Transit Uses of Funds	
TOP 2025 Transit Program <ul style="list-style-type: none"> ▪ Implement BRT system ▪ BRT H-1 ramps and zipper lane ▪ Build bus yard and transit centers ▪ Purchase buses and vans 	\$ 1,089
Surplus / (Deficit)	\$ 0

6.2 Transportation Improvement Program

Projects included in the TOP 2025 are eligible to be included in future Transportation Improvement Programs (TIP). The inclusion of a project in the TIP is an important step in the implementation process in that only projects included in the current TIP are eligible to apply for federal funding.

The TIP is a three-year programming document that identifies funding amounts by source of funding, jurisdictional responsibility, type of project and year of funding. Thus, the TIP describes and establishes priorities for federally assisted transportation programs and projects selected by the OMPO Policy Committee for implementation during the three-year program period.

The TIP is adopted by the OMPO Policy Committee and is incorporated as the Oahu element of the Statewide TIP (STIP). The STIP is the official document the U.S. Department of Transportation uses to authorize federal funds for projects in Hawaii.

6.3 Project Development Process

As planning proceeds for individual projects and programs of the TOP 2025, each will be required to comply with federal regulations and planning procedures. These regulations and procedures offer numerous opportunities for additional public input as each project undergoes more detailed planning, design and environmental documentation. Sufficient safeguards are in place to ensure that each project will be thoroughly studied and discussed.

7.0 Conclusion

With the TOP 2025 improvements, the future transportation system on Oahu is projected to perform substantially better than a scenario without the proposed improvements. Transit ridership increased by more than 14 percent under the scenario with the TOP 2025 improvements. For the two strongest indicators of congestion on the roadway system (vehicle hours traveled and vehicle hours of delay), the TOP 2025 transportation system performs at congestion levels that are significantly less than the 2025 Baseline. Under the scenario with the TOP 2025 improvements, vehicle hours traveled are projected to decline by 12 percent and the hours of delay on the roadway system are projected to decline by 23 percent.

Performance of the TOP 2025 with respect to meeting the identified goals and objectives was also evaluated. All 27 objectives were met by the proposed list of transportation improvements, as summarized in Table 5-6.

The financial analysis presented in Chapter 6 demonstrates that the TOP 2025 highway and transit projects for the fiscally constrained regional transportation plan will have sufficient revenues through a combination of existing revenue sources and additional revenue assumed to be in place over the next 25 years. The total identified funding needs included the estimated cost of the TOP 2025 projects of slightly more than \$3.6 billion along with system preservation needs for state highways identified as an additional \$1.05 billion over the life of the 25-year plan. The total identified need of almost \$4.7 billion exceeded the revenues that could be assumed to be in place from only existing sources.

In addition to the traditional FHWA, FTA, state and local contributions to TOP 2025 projects, two other sources of revenues were identified. The first is developer contributions, which may involve private financing of selected elements of projects, facilities or land donations. The other additional revenue source results from the typical increases in the tax rates of state highway funding.

The assumptions used to project the additional State Highway Special Fund revenues are reasonable based on historical trends in tax rate increases over the last 25 years. Likewise, the assumption of an average developer contribution of 20 percent of potential developer-funded projects, which will be developed in a forum outside of the TOP 2025, is also valid. As a result of these assumptions and projections of federal, state and local highway funding levels, the revenues are sufficient to fund the TOP 2025 recommendations.

The TOP 2025 recommendations define a transportation system for Oahu's future that will help to achieve the four goals adopted for the plan. The projects included in the TOP 2025 achieve these goals within the fiscal constraints of funding that will be available within the 25-year time frame of the plan.

Transportation for Oahu (TOP) 2025 Final Report, April 2001

ERRATA SHEET:

The following changes and clarifications should be made to Chapter 5.3 of the TOP 2025 final report to reflect the methodology used to determine Title VI and Environmental Justice populations. This methodology was developed as part of the Environmental Justice in the OMPO Planning Process report, approved September 2001. It is available on the OMPO website at <http://www.eng.hawaii.edu/~csp/OMPO/>.

The corrections to the text are italicized.

Page 5-17, paragraph 4:

The specific impacts of a proposed project on the populations identified under the Environmental Justice regulations cannot be evaluated at the level of a regional plan. *The distribution of projects within a regional plan can be evaluated with respect to Title VI and Environmental Justice to ensure that the benefits of the regional plan benefit all populations regardless of race or income. As projects are programmed for funding, the Transportation Improvement Program (TIP) will be evaluated in a similar manner to verify that the sum of projects within the TIP comply with Title VI and Environmental Justice regulations.*

Page 5-17, last paragraph, and 5-18:

The shaded areas in Figure 5-9¹ show the locations of minority and low-income populations on Oahu. *Using 1990 U.S. Census data, the following criteria was used to identify areas with concentrated minority ethnic populations:*

- A block group was selected as EJ if the standardized score² of the percentage of any of the defined ethnic minorities, standardized over all block groups, equaled or exceeded 1.0.

¹ In the *Environmental Justice in the OMPO Planning Process* report, this figure is number Figure 5, *EJ Neighborhoods: Minority OR Low-Income – 1990*.

² A standardized score is the difference between any given score in the population and the mean of its population divided by the standard deviation of the population. The standardized scores follow the standard normal of “z” distribution for large populations. A z-value of 1.0 is commonly used in transportation planning Environmental Justice work to designate highly concentrated populations. One standard deviation above the mean cuts off approximately the upper third of the distribution; therefore, selecting cases with a standardized score of 1.0 or larger will generally select the upper 34% of a distribution.

- *A block group was selected as EJ if the standardized score of the percentage of families in poverty equaled or exceeded 0.0.*
- *A block group was selected as EJ if the standardized score of the percentage of persons of Hispanic ethnicity or culture equaled or exceeded 1.0.*
- *Remove from the set of blocks considered any blocks that are wholly on federal military base grounds, since many of these areas are not accessible for state and county transportation planning purposes.*

This results in the selection of any block group with a concentration of one or more minorities, and any block group with more than the mean percentage of families at, or below, the poverty level.

As can be seen in the Figure 5-9, the proposed TOP 2025 improvements will help to provide improved transportation service in the areas with the identified Environmental Justice populations. *The Environmental Justice in the OMPO Planning Process report also analyzed the impacts of the TOP 2025 with respect to Title VI and Environmental Justice. The analysis indicated compliance with the principles of Title VI and Environmental Justice based on the quantitative performance measures of mobility, accessibility to transit, safety, equity, and population policy.* More specific evaluations will be done when TOP 2025 projects are programmed for funding.